COAL AGE

The Weekly Journal of the Coal and Coke Industries

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Innocent and Guilty Alike

REVIVED and persistent rumors that the President is about to designate someone with authority to administer control over the coal industry—a fuel administrator—means but one thing, that no matter how successful the various steps to regulate distribution may be, the present lack of any control over prices presents an insurmountable obstacle to the policy of hands off by the Government. If a fuel administrator is appointed it will be to regulate prices, and the industry, struggling hard to justify its existence as private enterprise, will be condemned to some form of permanent regulation through the selfishness of the guilty few.

The Innocent Union

DID William Green, secretary of the United Mine Workers, have his fingers crossed when at Atlantic City last week he disclaimed responsibility by the miners for any shortage of coal? "The men of our organization are working everywhere they are permitted to work. Thousands of them are not working, but that is not their fault," Mr. Green is reported to have stated. While he was saying this thousands of coal miners, members of his organization, were on strike in Illinois and Indiana in direct and acknowledged violation of their solemnly-pledged contract. Furthermore, through the direct efforts of the United Mine Workers, men are even yet on strike in portions of the coal fields of West Virginia and Alabama and in the anthracite field of Pennsylvania.

Mr. Green, of course, knew of these strikes, but he nevertheless announced that labor has washed its hands of all blame for a winter coal famine in the United States. Miners, union and non-union, are for the most part working as they are given railroad cars to fill, laboring perhaps as industriously as any class of American labor in these indifferent times, but the miners' union cannot escape the blame for unlawful strikes and for stirring up of trouble in peaceful coal fields, with attendant reduction in output.

Whose Foot Does the Shoe Fit?

HIGH prices for coal—the exorbitant, outrageous prices that have characterized the spot market for the last three months—are not the result of the machinations of a single group or coterie of men in any branch of the coal industry. They are the direct and inevitable result of bidding in a tight market with the law of supply and demand set at naught by the failure of transportation. To say that the wholesaler, middleman or jobber—whatever you may term him—is the sole cause of the trouble is to fly in the face of the facts. The percentage of the total of operators of coal mines who have accepted panic prices for their product is no less than that of jobbers who have taken advantage of the situation.

Colonel Wentz is fearless and above all a man of his word, and when he states that the National Coal Association is going to "clean house" he means just what he says. Everyone, be he producer or jobber, who is taking advantage of the present situation is helping damn the coal industry and is deserving of all the condemnation that is being heaped upon him. Not all the profiteering in coal, however, is to be found in the tidewater trade and it is hard for us to believe that none but jobbers are guilty here, as charged by the National Coal Association last week.

Operation of the tidewater pools is complicated and it is difficult to obtain trustworthy data on which to base conclusions regarding who is guilty of speculating in this game and to what extent the practice is indulged. The charge that 5,000 cars are being withheld from legitimate trade by those engaged in speculation when interpreted appears to mean that possibly 300 cars of coal a day, or 7 per cent. of the total dumpings on the Atlantic seaboard, are turned over by these dealers, as it requires about fifteen days for the cars to make the round trip between the mines and the piers. It would appear that the disturbance created over these 5,000 cars, which in number are less than one per cent of the total open top cars in use, is out of proportion to their relation to the whole situation.

Business through the tidewater exchanges is largely that of the middleman, for the larger producer and shipper does not use this medium. The newspaper attacks of the National Coal Association against the shortcomings of the exchange have been characterized as a smoke screen. They do not square with the published declarations of the president of the association and are not constructive.

Canada Has an Export Problem

CANADA seems to be having the same sort of problem as regards exportation of coal as we are having in this country. According to data published by the Geological Survey, exports from Nova Scotia to the United Kingdom and Newfoundland in the first three months of the year decreased from 248,025 net tons in 1919 to 125,200 tons in 1920. In the same period exports to France and the Netherlands increased from 3,835 tons to 104,413 tons. Although the quantities appear small in comparison with exports from this country, it is evident they are significant, for only recently the Canadian Government has embargoed exports other than to Newfoundland except by permit.

Wonderful!

DR. ROYAL MEEKER goes to Europe to be statistician for the Allies. Perhaps the *Monthly Labor Review* of June is his last publication and the "Minimum-Quantity Budget" on the opening pages of that issue his last and *magnum opus* in the Bureau of Labor. Let us hope so, for there is nothing worse than

a good man misled or a wise man working on a false premise.

He starts his inquiry into the minimum-quantity budget of the workingman with a study of the workman's food needs and declares that workmen and their families require a certain number of calories per day for their sustenance. How does he know that? He is too scientific to neglect to tell how it was determined. Here is the secret: "The quantity food budget submitted here as representing the food requirements of the standard family of five was obtained by averaging the actual amounts of food used by 280 families selected from the cost-of-living survey made by the Bureau of Labor Statistics." Passing over the word "selected," though it has a suspicious sound, it is permissible to ask, Is this a calorie food budget or is it a budget based on the purchases from which the calorie value was determined? The word "calorie" is a clever word which cleverly veils the fact that we do not know how many calories a workman needs but how many the average workman buys.

Dr. Meeker either expects to fool us or is fooled himself by his calories. He is giving us the word to bite on, but assuredly it means nothing. In fact Dr. Meeker's statement in the ultimate analysis really says that the minimum quantity of food consumed by the workingman and his family should be that found to be the average purchased by the 280 families which some one, unstated, selected. Some consumed more, some less, of course, but the average should be the minimum. Some saved, some were unthrifty, yet the happy mean should be the least food budget provided.

All this is very unscientific, for if the average is to be the minimum, the minimum is ever too low, and if it is brought up to the average that figure is immediately made higher and the minimum again requires adjustment. This Meeker budget is not therefore a minimum-quantity budget, as Dr. Meeker would call it, nor a minimum budget, as Jett Lauck would term it, or even a minimum-comfort budget, as the operators would dub it, but an average-quantity budget for 280 persons. If this average continually camouflages as a minimum, wages must steadily rise. The mean of ten and twenty is fifteen. If the mean is made the minimum we have as the minimum the mean of fifteen and twenty, providing all the time that the twenty does not go up. This minimum, therefore, is at least seventeen and a half and ready for a new boost, for the average is already at least eighteen and three-quarters, which is its exact value if the upper figure is still twenty.

The same jugglery is performed by Dr. Meeker in his clothing schedule. Here is the frank confession: "The clothing budget herewith presented has as its basis the clothing budgets of approximately 850 families having three children under fifteen years of age which were included in the survey of the Bureau of Labor statistics in 1918-1919." It is therefore a selected average and not a true minimum of "health and decency" or of "comfort."

Perhaps the housing requirements in the budget are based on a less labored calculation. Dr. Meeker suggests that we take as standard "the size of the various rooms adopted by the Bureau of Industrial Housing and Transportation of the Department of Labor, which undertook the war housing of the Government other than that required by shipbuilders." Perhaps they guessed what was the needed accommodation, perhaps they averaged the demands and customs of 280 or 850 or some other number of families. It was somewhat hard to do so, for rooms vary in size, and a mere averaging of a number of rooms, small and large, will be misleading. The good doctor realizes that and says so.

The Industrial Housing Board doubtless based its decision on an average, for Dr. Meeker says "For twenty cities selected at random, and including all families scheduled regardless of size or income, those living in houses averaged 1.007 rooms per person, and those in flats and apartments 0.931 per person." A family of five therefore, including rich and poor, would on an average have 4.655 rooms to 5.0035 rooms. The Industrial Housing Bureau takes as the minimum need five rooms, which is a little above the average.

Hence the greater part of the budget is an average and not in any sense a minimum. At best such arrangements would bring the minimum, average and maximum budgets to a common level. Those skilled workers who receive more than the average will oppose this arrangement and the minimum will soon exceed the former maximum. Such economic fallacies to those who favor America first will make them rejoice that Dr. Meeker goes over the water to spin his subtle yarns to the Allies instead of to us.

Let Us Cheer Once More!

AS THE result of Presidential pressure the mine workers are back at work. The public will be asked, even imprecated, to applaud their readiness to comply with the President's admonitions. The mine workers will rely on the man of the street forgetting the fact that the union had a contract and should have lived up to it, with or without the coaxing of the Chief Executive.

The workers of the bituminous mines had their day in court with the Bituminous Coal Commission and accepted the decision of that tribunal. Yet now the award must be reopened, for it is alleged that too much stress was laid during the inquiry on the wrongs of the miner and too little emphasis laid on what the mine worker needed. It was represented that the percentages of the miner were not equal to the increases in the cost of living. As a result of this plea he got the bigger advances in the award. Now that it is settled it is time to show that at the last revision the miner's increase was larger than that of the day worker, and it will be convenient to forget, of course, that at previous revisions it was the day worker who had received the greater benefit.

We shall have eventually to adopt the British system and fix on some period in the past, taking the wages of that date as a basis, for, as it is now, when unskilled labor is scarce the day worker is in demand and gets increases of wage in excess of those given the miner, which makes the latter jealous. When the miner gets a countervailing increase the day worker is not satisfied, for his advance is not, in that particular revision, equal to that received by the miner. So he is back for more. No one can see a single day beyond the last revision. The only way to cure this endless dissatisfaction is to base earnings always on the wage paid on some specific date, and what better date can be found than the beginning of the war, Aug. 1, 1914?

However, let us cheer once more! The strike is over again. The mine workers have shown their "patriotism" by not violating the contract for as many days as they at first threatened to do.

Federated Engineers Announce Organization Meeting

Notices were sent out by the Federated American Engineering Societies Friday, Aug. 6, to 150 leading engineering organizations in the United States, asking them to appoint delegates to an organization meeting in the autumn. A joint conference committee of the four big engineering societies, designated at a meeting in Washington, June 3 and 4, of national, State and local engineering and allied technical organizations, is acting as a committee on organization.

British House of Commons Ratifies Spa Coal Agreement

When the vote for an advance of £5,000,000 to Germany in connection with the Spa coal agreement came up in the House of Commons Aug. 2 it was not seriously challenged, and was agreed to without revision.

Palmer Aid, Who Handled Coal Injunction Cases, Resigns

Judge C. B. Ames, assistant to the Attorney General since June, 1919, and in charge of the Government's case in the coal-strike injunction proceedings, has tendered his resignation to President Wilson, effective Aug. 31.

Anthracite Wage Commission Begins Washington Meetings

The anthracite coal commission appointed by President Wilson to adjust wage schedules in that industry met in Washington Aug. 3 and started at once on the preparation of its report. The report probably will be ready for submittal to President Wilson this week.

Earthquake Opens Oil Wells

Two oil wells were opened on city-owned property in Los Angeles by the earthquake of July 28, the City Engineer reported. The Board of Public Works announced that the wells would be developed for the municipality.

Poor Coal Delays Steamer Noordam

The Steamer Noordam of the Holland-America line took twelve days for her last westward journey, which is a day or two longer than usual. The trouble was with the coal. Fuel with which the bunkers are filled at European ports has poor steaming qualities.

Allies to Lend Germany 40 Gold Marks Per Ton of Coal

Representatives of the Allies in conference at Boulogne have agreed that the Reparations Commission shall handle the German coal indemnities. The Allies will lend Germany 40 gold marks for every ton of coal delivered, Germany giving promissory notes maturing May 1, 1921. The Reparations Commission is empowered to sell these notes or discount them. The first issue, totaling 60,000,000 marks, will be out in September and others will follow monthly.

Iron Market Feels Benefit of Freight-Rate Increase

In its weekly summary of the iron market as of Aug. 4 the *Iron Age* says: "The good effect of the freight-rate increase is unmistakable, and whether related to it or not, there has been more active buying in some lines in the past four days, particularly in pig iron. At the same time the industry takes a more cheerful view of the transportation outlook, and has found some actual though not great improvement."

NEWS BRIEFS

Terse Items Chronicling Events of Interest to the Industry

Virginia Coal & Coke Co. Reports Increased Net Income

Net income of the Virginia Iron, Coal & Coke Co. for the quarter ended June 30, after charges and taxes, was $790,253, according to a statement issued Aug. 2. This compares with a net income of $564,946 in the preceding quarter and $1,355,217 for the six months, equivalent to $14.93 a share on the $9,073,600 outstanding capital stock. Gross earnings for three months were $948,640 and for six months, $1,676,171.

Criminal Phase of Labor Court Law Held Unconstitutional

Constitutionality of the criminal phases in the Kansas Industrial Court law will be tested in the Supreme Court as the result of a decision Aug. 2 in the Wyandotte County District Court in which Judge R. P. McCamish held as unconstitutional the provision of the law making liable to arrest persons influencing others to quit work. This was announced by members of the Industrial Court. The case involved Jerry Scott, a switchman, arrested during the strike last April.

Railroads to Spend 700 Millions For Improvements

With their poverty-stricken condition relieved by the rate increase just awarded by the Interstate Commerce Commission, the railroads of the United States plan to spend about $700,000,000 for improvement of their properties and the purchase of additional rolling stock and equipment during 1920. According to estimates submitted to the commission by about 100 of the roads the money will be spent for essentials needed for a long time. In other words, the public will not be required to pay higher rates on passenger tickets and in freight bills for the sake of new passenger stations or elaborate but unnecessary improvements.

Suspend Long and Short Haul Clause

According to a ruling announced Aug. 5 by the Interstate Commerce Commission the railroads of the country were authorized to enforce the new freight rates and passenger fares until Nov. 1 without observing the long and short haul clause of the Interstate Commerce Act.

Panama Canal Traffic Sets New Record

Commercial traffic through the Panama Canal set a new record in the fiscal year ended June 30 last, according to an official report received in Washington. A total of 2,478 commercial craft, with an aggregate tonnage of 8,545,000, made the transit, paying more than $8,800,000 in tolls and other charges. All expenses of operation and maintenance will not exceed $6,650,000, indicating a surplus of $2,150,000. This is nearly five times the previous record surplus.

Railroads Seek Changes

The Père Marquette Ry. has asked the Interstate Commerce Commission for authority to dismantle and discontinue its branch line running between Rapid City, Mich., and Kalkaska, Mich. At the same time the Michigan Northern Railway requested authority to extend its line from Lansing, Mich., to Mount Pleasant, Mich.

Miners' Congress Declares for Socialization of Mines

Resolutions declaring for the nationalization or socialization of mines were unamiously adopted Aug. 4 by the miners' congress in session at Geneva, Switzerland. British delegates said miners of their country were ready to call a general strike to enforce nationalization.

Robert Van Arsdale Norris

Consulting Engineer and Valuation Expert, Wilkes-Barre, Pa.

THE usual reply to inquiries seeking technical information regarding the anthracite region of Pennsylvania is "see Norris," reference, of course, being made to R. V. Norris, E. M., of Wilkes-Barre. "Van" Norris, as he is generally known by those who enjoy intimate acquaintance with him, is a veritable walking encyclopedia of information regarding that interesting region, acquired through thirty-five years of hard work and study.

Born in Newark, N. J., May 2, 1864, the only son of Thomas Baldwin and Mary Latimer (Ruxton) Norris, he was graduated from the Columbia College School of Mines with the degree of E. M. in 1885. In the following year he entered the service of the Susquehanna Coal Co., advancing to chief engineer in 1900. In 1904 he resigned to go into private consulting practice. He was immediately appointed consulting engineer for that company and continued in that capacity for ten years.

When the anthracite properties of the Pennsylvania R.R. (the Susquehanna Coal Co. and the Lytle Coal Co.) were offered for sale in 1914 the task of valuing the properties was confided to Mr. Norris, who spent fifteen months in the work and accomplished one of the most difficult and extensive jobs of the kind ever attempted. From 1905 to 1907 he was consulting engineer for Coxe Brothers & Co., Inc., and from 1909 to 1918 for the coal department of the Delaware, Lackawanna & Western Railroad Co., resigning that position when drafted into the service of the Government as one of the engineers' committee of the U. S. Fuel Administration.

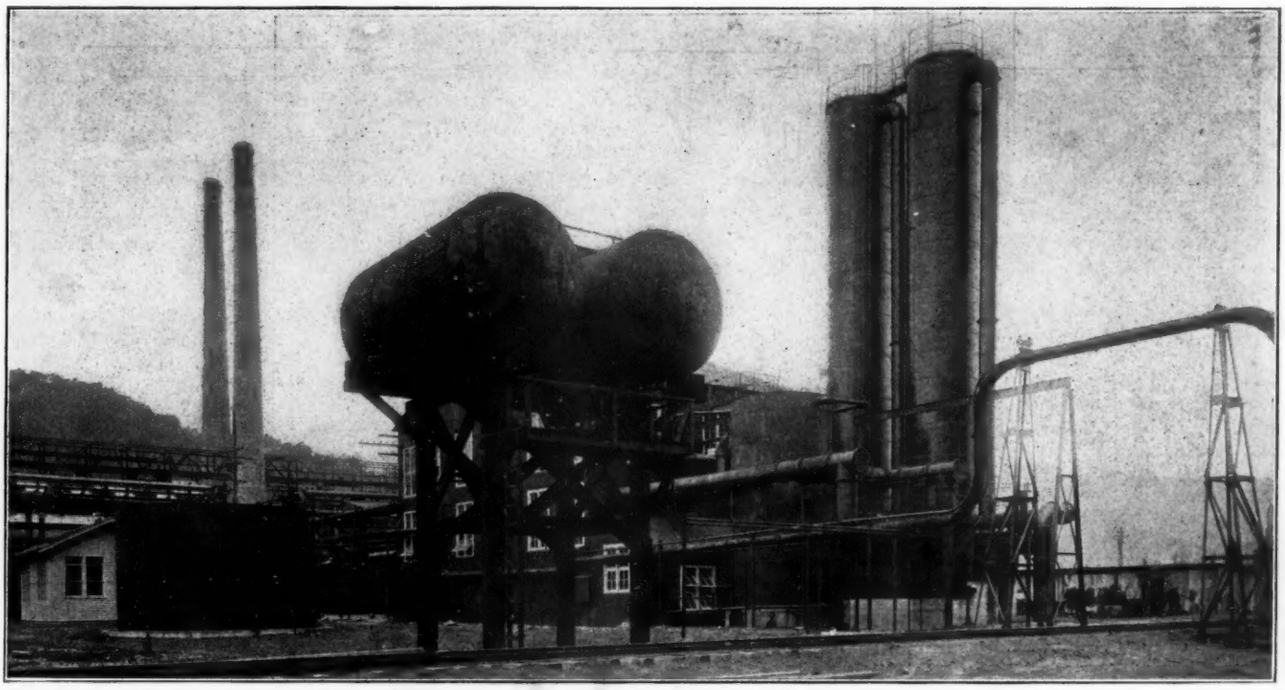
While his principal activities have been in anthracite mining he has been for thirteen years and is consulting engineer for the Sterling Salt Co. of New York and served in a similar capacity in the construction of the Wilkes-Barre & Hazleton (third rail) R.R. He holds the same position in the operation of the railroad.

It is as a valuation expert, however, that Mr. Norris probably has achieved the most distinction, as this work requires a high degree of technical skill and judgment. His selection as valuation engineer by the Pennsylvania R.R. for its anthracite properties probably was the outcome of the way he performed the task of valuing the properties of the Temple Iron Co. when its dissolution was ordered by the U. S. Supreme Court.

Mr. Norris, in addition to being a mining engineer, has also qualified as an expert in accounting and taxation. As the former he was retained, in company with Colonel R. H. Montgomery of New York, to prepare a uniform system of cost accounting for the anthracite companies, and in the latter capacity has been called into service as a member of the Taxation Committee of the American Institute of Mining & Metallurgical Engineers by the U. S. Treasury Department, as an adviser in preparing income and excess profits tax schedules for wasting industries.

While engaged in all of this professional work Mr. Norris has found time to make many valuable contributions to the literature of his chosen profession. He also has filled numerous honorary positions.

Mr. Norris is a member of many engineering societies and social clubs. As a means of recreation he prefers golf to anything else, as his membership in four clubs dedicated to that sport indicates. He is never happier than when he has made a 275-yard drive straight down the course, a long approach dead to the hole, or a putt clear across the green into the cup. They are tests of an engineer's accuracy, you know.



AMMONIA TANKS AND GAS SCRUBBERS
Gases resulting from the carbonization process are passed through the scrubbers and the light oils removed. The ammonia tanks shown are for storage purposes.

Prospect That Soon No Coal Will Be Used Without Preliminary Devolatilization*

Devolatilized Coal Has Been Used Successfully on Railroads—When Stored Is Safe from Spontaneous Combustion—Progress Is Being Made in Commercial Manufacture of This Fuel—Range of Applicability of Process Is Fully Assured

By George Esherick, Jr.
New York, N. Y.

As a fuel on railway locomotives carbocoal has given entire satisfaction in the several tests so far made. The railroads are confronted with the problem of eliminating smoke at their city terminals, and it appears that the use of carbocoal will solve this problem for them. The fuel is well adapted to locomotive use, particularly in that it gives a steady, uniform fire and responds readily to draft changes. The absence of fines permits of maintaining a high combustion rate with less draft than is required for coal when it is necessary to force steam production.

Another pronounced advantage that carbocoal possesses over bituminous coal for railway use is that it can be stored in unlimited quantity with no danger of spontaneous combustion. This also is particularly important in the West, where hard coal is not available for storage and soft coal cannot be safely stocked in large quantities.

Experimental work on the Smith process has been carried on for the last five years at Irvington, near Newark, N. J. A small plant has been built there, with several retorts of commercial size in which the coal could be tested on a plant scale, as well as in the smaller laboratory apparatus available.

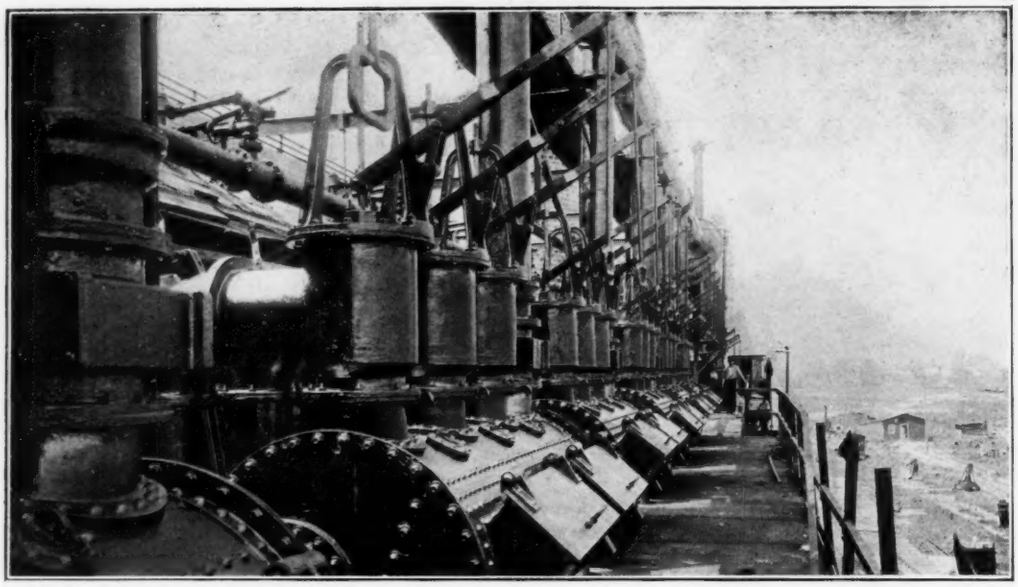
Output of Virginia Plant 500 Tons Daily

A new commercial plant with capacity for treating 500 tons of coal per day will soon be put in operation at South Clinchfield, Va. This plant is equipped with twenty-four low-temperature and ten high-temperature retorts. The primary, or low-temperature, retorts are arranged in four batteries served with crushed coal from overhead bins. The semi-carbocoal which is continuously discharged from the primary retorts falls onto inclosed conveyors, and is carried to large storage bins in the briquet plant.

Here it is ground, mixed with pitch, fluxed, and briquetted on heavy roll presses. The warm briquets travel by a long conveyor to the secondary retorts. By the time they reach the end of this journey they have hardened sufficiently to stand handling and are charged into the retorts by a steel charging car. The finished briquets are dumped from the inclined secondary retorts into quench cars. They are then quenched and delivered to the loading bins.

The plant also embraces the usual equipment for col-

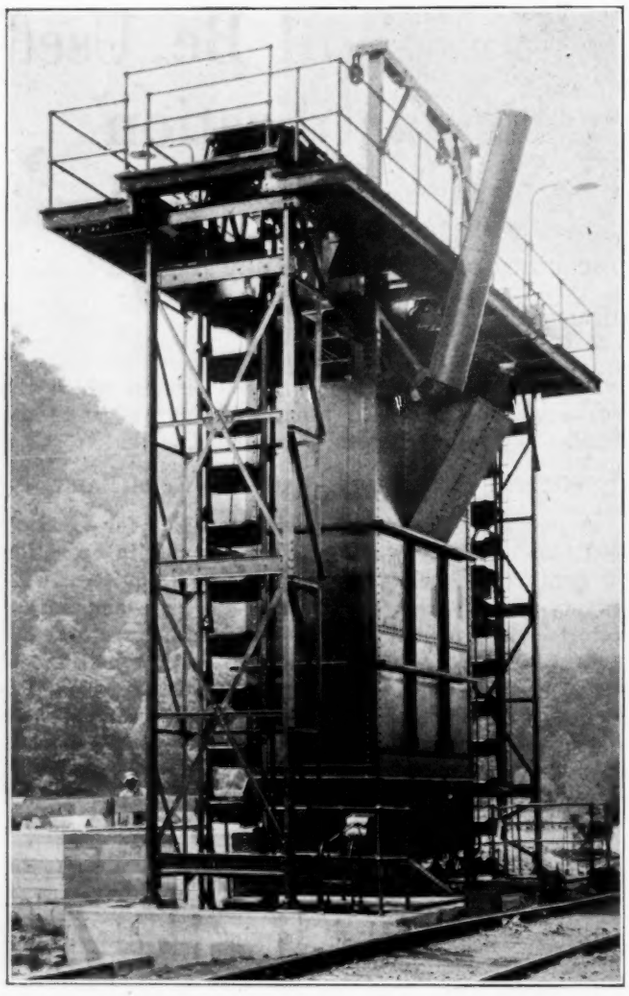
*Second half of a paper presented before the Kentucky Mining Institute, June 4, 1920, and entitled "The Low-Temperature Carbonization of Coal and the Future of Bituminous Coal." The first installment appeared on pages 275-277 of the issue of Aug. 5 and is entitled "Making the Smokiest Coal Smokeless While Saving Byproducts."



Top of Secondary Retorts

In these retorts raw briquets are distilled for six hours at a temperature of about 1,800 deg. F. The illustration shows the hydraulic and foul mains by which the distillation products are drawn off.

lecting and working up the byproducts. The equipment installed includes an ammonia plant, a light-oil plant, and a tar-distillation plant with all the necessary auxiliary tanks, and other fixtures. The coal treated will come from mines a few miles away. It will be a good grade of bituminous coal, carrying about 7 per cent of ash and 35 per cent of volatile matter.



STATION FOR QUENCHING AND LOADING BRIQUETS

Briquets after coming from the secondary retorts are dumped and quenched before shipping. Note the bucket flights by which they are elevated for loading.

The construction of the Clinchfield plant was begun in the autumn of 1918 with funds provided by the U. S. Government. This installation is therefore completely Government-owned, but its operation will be conducted for the Government by the Clinchfield Coal Products Corporation. The ultimate plan is to increase carbonizing capacity to 1,000,000 tons per year.

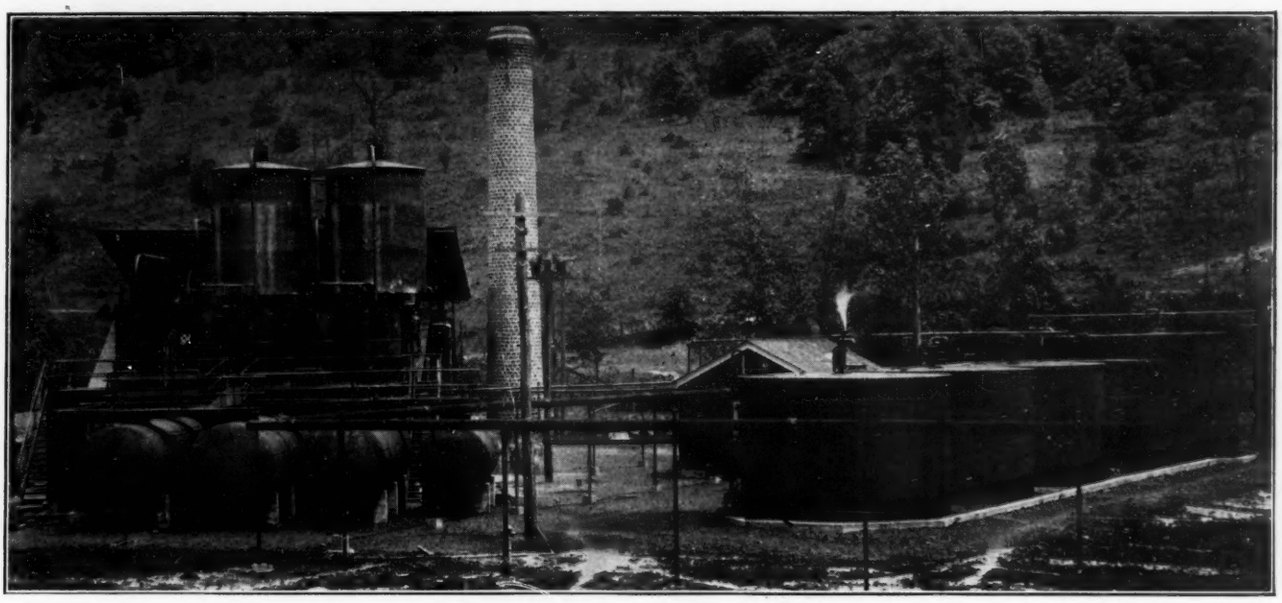
While engineers, not only in this country but in England, France, Germany and Japan, have for many years appreciated the value of developing a practical means for distilling coal at low temperatures and thereby removing the valuable oils, it is nevertheless worthy of note that this plant represents the first commercial installation ever built on a large scale for this specific purpose. With the present shortage of petroleum oils and the prediction by the U. S. Bureau of Mines that the output of the present known existing oil resources is limited to only two decades, the commercializing of low-temperature coal distillation is now most seasonable.

Over a Hundred Coals Have Been Tested

Low-temperature carbonization is by no means limited to high-volatile coals, but can be applied to almost any bituminous coal and even to lignite. With a coal of lower volatile content the yield of byproducts will, of course, be less, but this in a degree is compensated by a higher yield of the carbocoal itself. For example, a coal of 25 per cent volatile matter yields about 75 per cent of carbocoal and 26 gal. of tar; a coal of 35

TABLE II. YIELDS OF CARBOCOAL, TAR, GAS, AMMONIUM SULPHATE AND TAR OILS FROM KENTUCKY COALS

Source of Coal	Ash	Volatile Matter	Carbocoal, per Cent	Tar, Gal.	Gas, Cu.Ft.	$(NH_4)_2SO_4$, Lb.	Salable Tar Oils, Gal.
Black Beaver Coal Co., Ashland, Ky.	2.97	38.4	65	36	8,650	24	17
Big Elkhorn Coal Co., Floyd, Ky.	3.37	40.2	67	29	7,250	20	18
Mile Branch Coal Co., Boyd Co., Ky	3.66	40.4	67	39	7,540	23	19
Elkhorn City Coal Co., Pike Co., Ky	3.80	32.5	70	34	8,110	20	20
Winston Creek Coal Co., Marrowbone, Ky	4.98	36.6	65	38	7,650	21	23
Furnace Coal Mining Co., Pike Co., Ky	2.86	39.7	66	42	7,900	23	24
Millers Creek (washed slack)	3.05	36.9	72	31	9,950	23	16

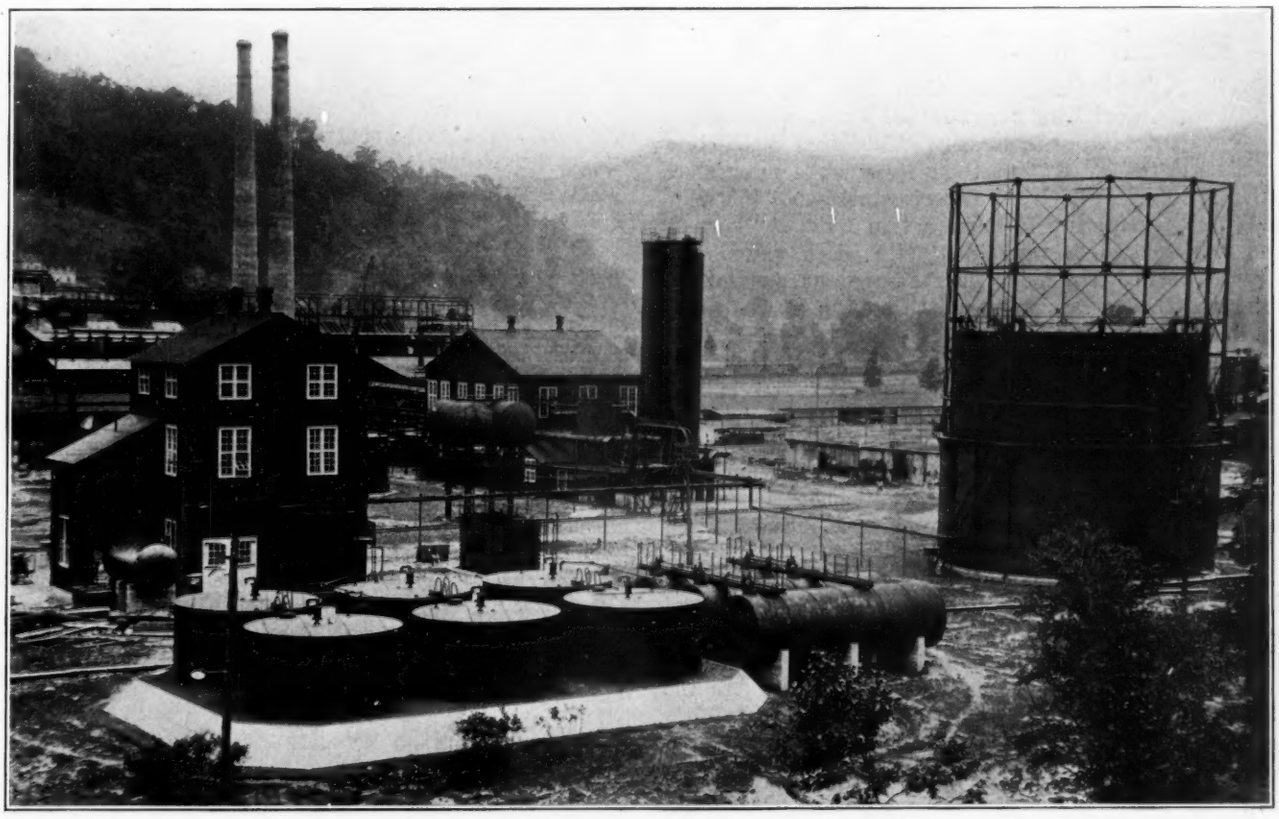


STILL FOR THE PURIFICATION OF THE TAR
In this section of the plant distillates and pitch are recovered. The pitch, or a part of it, finds use in this same plant as a binder for the briquets.

per cent volatile matter yields 70 per cent of carbocoal and 30 gal. of tar, while a coal of 45 per cent volatile matter yields only 50 per cent of carbocoal, but 50 gal. of tar. These figures are, of course, only approximate, since the nature of the individual coals will materially influence the yields.

At the Irvington plant more than one hundred coals from various sections of the United States have been tested in small-scale apparatus, while a considerable number also have been tried in the commercial-sized retorts. Satisfactory briquets have been obtained in all cases. In Table II some of the yields obtained with Kentucky coals are tabulated. For the most part these results are from the smaller-scale tests. Long experience in comparing small-scale with plant-scale results has shown that the carbocoal yields in the two cases are almost identical.

Of the natural resources of the earth, coal and iron ore are by far the most important. Without coal the iron would be of little value. While the amount of this



GENERAL VIEW OF THE BYPRODUCT PLANT
Stills, scrubbers, ammonia, gas and other tanks. Take a good look at it. It is a picture of what a coal mine will look when we, as a nation, take good care of that valuable vegetable complex known as coal.

fuel yet unmined is enormous, the supply is by no means inexhaustible. It must be remembered also that the demand for fuel in the industries is increasing rapidly.

Bituminous coal has played a major rôle in the development of industry, and it is destined to play a yet more important part, not alone as a fuel but as a raw material from which a large number of commercial products may be manufactured. Most of the bituminous coal mined is still used directly as a fuel, but there are powerful factors operating to change this state of affairs. The increasing demand for fertilizers, for motor spirit, for the many products of coal tar, is one of these factors; conservation of our greatest natural resource is another.

All of these facts considered, it is not difficult to foresee a time when no raw bituminous coal will be burned for any purpose. But before that day arrives there must be available everywhere smokeless fuels to take the place of this coal, and in the very nature of the problem these fuels must be manufactured from bituminous coal or from coal of some lower grade. The production of carbocoal is a long step toward a solution of the problem, not only because of the high qualities of the fuel itself but because the process of manufacture results in a high yield of byproducts which serve to lower the cost of producing the fuel.

Don't Attempt to Travel Too Far In Mine-Rescue Apparatus*

Wearing Oxygen Rescue Equipment, Three Men Try To Go Down a 25-Deg. Slope for 1,200 Ft. and Return—They Lose Their Lives

BY GEORGE S. RICE†
Washington, D. C.

THREE men recently lost their lives in the Black Diamond Coal Mine near Seattle, Wash., while wearing oxygen breathing apparatus. The press dispatches stated that these men lost their lives while practising with the equipment. Later reports stated that the men died while attempting to make a trip 1,200 ft. down a 25-deg. slope which was filled with black damp, the purpose of the trip being to measure the amount of water that had accumulated at the bottom of the mine. The long journey was attempted despite the fact that the dials of the oxygen tanks indicated that only a 45-minute supply was available. The oxygen in the tanks was soon used up and the men lost their lives from a deficiency of respirable air.

In spite of all the education and training done by the Government to prevent accidents, men are prone occasionally to take unnecessary chances. Every piece of apparatus, no matter how perfect, has its limitations. The Government, through the agency of the Bureau of Mines, has trained many thousands of miners in the use of mine-rescue apparatus. The training has been given to all miners who requested it and the bureau has gone to the extreme of urging miners to join the rescue and first-aid classes. In spite of all the efforts of the Government, men occasionally attempt the impossible.

To go 1,200 ft. down a 25-deg. slope, make observations, rest, and then return 1,200 ft., thus traveling a total distance of at least 2,400 ft. in forty-five minutes is a quick trip when a man is not encumbered with a heavy load, but to attempt it loaded with an apparatus weighing about 40 lb. makes it a more than hazardous undertaking.

Modern apparatus when fully charged will furnish oxygen for two to two and one-half hours when used with moderate exertion or with periods of rest, but a person uses four to five times as much oxygen in climbing a steep slope with a load of 40 lb. than he would when walking at a moderate gait along a level road. The 45-minute charge indicated by the dial will not last forty-five minutes if violent exertion is necessary. The Bureau of Mines in its handbook on "Rescue and Recovery Operation in Mines after Fire and Explosions," on p. 49 makes the following statement:

"When traveling in afterdamp or other noxious gases the rescue crew should observe every known precaution to insure their safety. Each crew should be composed of at least five men, including the captain, and the members of the crew should not become separated. If any member complains of feeling ill or is observed to be staggering or breathing unnaturally, the entire crew should immediately return to fresh air. In view of the liability that a member will receive some injury or his apparatus be damaged, a crew should never advance such a distance nor travel over such falls or wrecks as would prevent it from carrying one of its members back to fresh air. With the types of breathing apparatus now in service the maximum straightaway unobstructed course should not exceed 5,000 ft. with a reserve crew at the fresh-air base."

While in the foregoing it is to be noted that the maximum distance to be traversed is 5,000 ft., this explicitly refers to a level, unobstructed road, but, as previously indicated, a trip of 2,400 ft. down a steep incline would be more than equivalent to a 5,000-ft. trip on the level, which is the maximum distance allowable for a fully charged apparatus, that is, one with at least three times the amount of oxygen which it was alleged the three men had who made the disastrous trip in the Black Diamond Mine. While all the details of the affair are not known, at least enough has been indicated to send out a caution against men making such a foolhardy attempt, and it is desirable that the full facts be known so that the public will not be prejudiced against an apparatus which has the greatest of value if it is carefully used in accordance with well-established rules.

*Reprint of article entitled "Precautions in Use of Oxygen Rescue Apparatus" in U. S. Bureau of Mines Reports of Investigations for July.

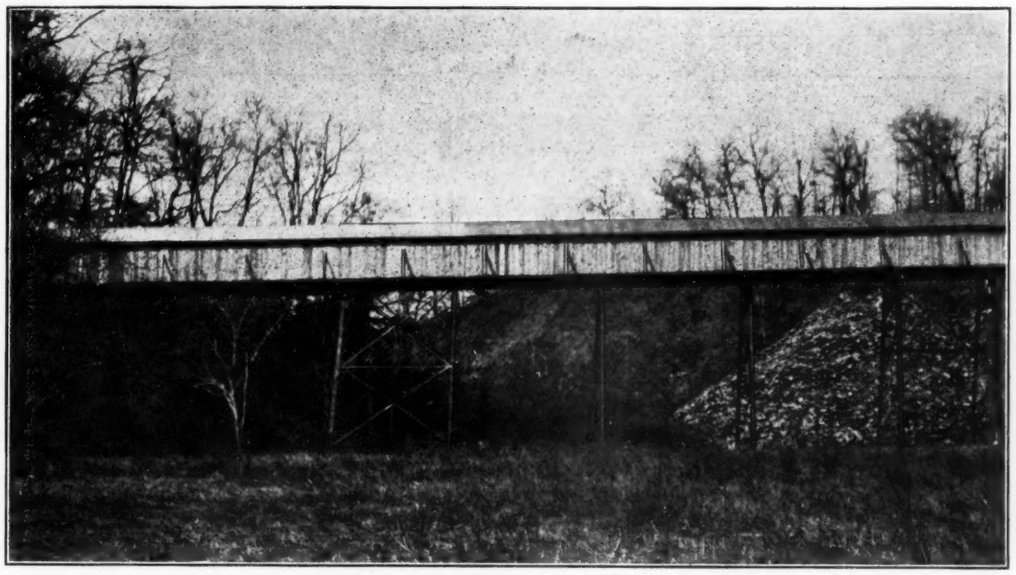
†Chief mining engineer, U. S. Bureau of Mines.

June Exports at New York

EXPORTS of coal and coke through the Port of New York during June of this year, with the exception of June of last year, show a falling off when compared with the three previous years. Shipments in gross tons, with the values for the month of June during the four years, follow:

	Anthracite		Bituminous		Coke	
	Tons	Value	Tons	Value	Tons	Value
1917	14,693	$106,173	1,939	$14,466	3,650	$49,646
1918	6,761	43,991	6,807	50,751	1,605	20,562
1919	10,482	88,292	25	250	2,614	42,814
1920	8,008	91,716	5,090	63,104	337	9,975

Particularly interesting were exports from this port of 3,000 gross tons of bituminous coal to Turkey in Europe and 1,501 tons to Germany. Egypt took 1,007 gross tons of anthracite and Newfoundland 3,633 tons.



First Viaduct Erected

This road was built some years ago. It is 430 ft. long and, in the deepest depression in the valley, 50 ft. high. It connects the original Brackenridge mine with the coal deposit in an adjoining hill.

Company by Erecting Big Mine-Car Viaduct Avoids Freight Rate and Car Shortage

Allegheny Steel Co. Subsidiary Builds a $100,000 Trestle as Part of a Mine-Car Road in Order to Enable the Steel Company To Be Independent of Expensive and Irregular Railroad Service

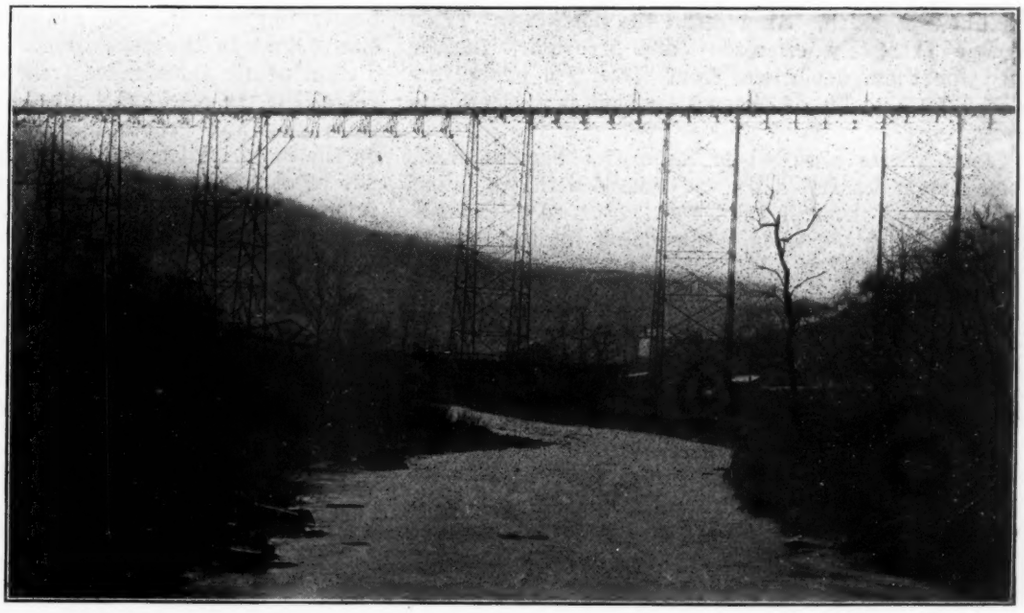
TO AVOID expensive railroad freights and the uncertainties of railroad transportation many expedients are being sought, the oldest and most natural being to place the consuming plant where it can get its supply of coal direct from the mine wagon. This arrangement was made long ago by the Allegheny Steel Co., which through its subsidiary the Allegheny Coal & Coke Co. operated a mine within easy reach of the steel plant.

Unfortunately the coal near the consuming point after a while was worked out and it became necessary to go further afield until the Allegheny Coal & Coke Co. was finally driven to the expedient of erecting a viaduct at a cost of $100,000 for the transfer of its mine cars. As it uses 1,000 tons of coal a day and as the coal would otherwise have to be hauled by the railroad it can easily be seen that the viaduct will pay for itself in a short time.

Such expensive structures are frequently financially advantageous where the producer of the coal can deliver his product by mine wagons direct to the consumer, for with this advantage he is superior to the hampering circumstances which he must meet when delivering his coal by railroad in close competition with other

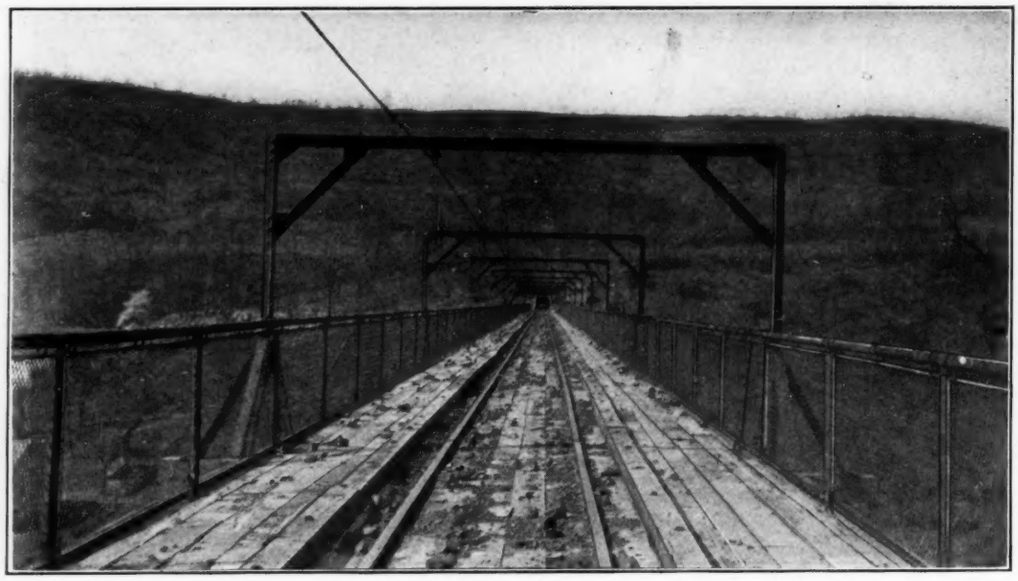
Merely a Tramroad Trestle

A tramroad trestle 1,000 ft. long, 125 ft. high and built at a cost of $100,000 is an unusually long, high and expensive structure for the use of mine cars. It saves railroad transportation, its cost and uncertainties, and that is the answer to the question "Why?"



On the High Trestle

Sixty-pound rails are used with a 6 x 6 in. timber guard rail. The grade is 0.421 per cent against the load. The floor is laid with white oak, the sleepers being 6 x 8 in. timbers, 18 ft. long.



producers. But apart from this consideration, which is an extremely important one, there is another. No consuming interest with the present uncertainty of car supply would hesitate to make a much larger sacrifice to free itself from the railroads so as to assure steady operation.

Frequent Changes in Location and Grade

The Allegheny Coal & Coke Co. mine is located at Brackenridge, the drift opening to the mine being in the hillside to the rear of the steel mill. Thence the loaded cars pass over a trestle to the tipple, where the coal is distributed to the steel mills. Most of the output, however, is used at the boiler house.

The mine is developed in the Upper Freeport bed, which is difficult to mine by reason of many steep local pitches. When the drift opening was first driven from the outcrop on the hill above the steel mills the coal acreage owned was not large and to permit the development of the mine other acreages had to be purchased.

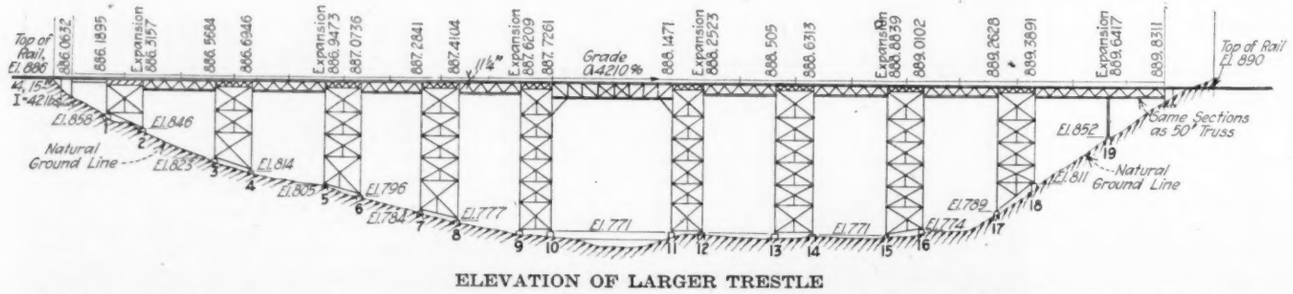
Such piecemeal development was not conductive to systematic planning. Each new acquisition made necessary some change in the main haulageway in order to bring the coal of the new area to the tipple with the maximum dispatch. As a result the haulageway often became extremely circuitous and irregular, further need for these deviations from directness being furnished by the dip of the coal, which was steep and irregular.

Steep grades unsuited to locomotive haulage made regrading necessary, and even demanded that a tunnel be excavated through solid rock. But such expenditures can be made when a consuming interest has its plant within reach of the mine wagons, and the mine continued its operations regardless of the lengthening roadway and extensive road revisions.

Some years ago all the acreage that could be purchased between the drift opening at Brackenridge and a point about a mile distant where the coal outcropped on the farther side of the hill had been practically worked out. The bed continued, however, on the opposite side of the valley, so some acreage was purchased there, and a trestle was constructed in order that the main haulageway might be continued. This trestle, which is built of steel, is 430 ft. long and 50 ft. high at its highest point. The roadway is covered with rough lumber, while the roof is tar-papered.

In this manner a roadway was assured, enabling coal to be delivered to the mills. At the same time that the trestle was built the main haulageway through the hill to Brackenridge was straightened and easy grades were laid. Rails of 60-lb. weight were used throughout. The distance from outcrop to outcrop through the second hill is about a mile. All the available acreage in the second hill was purchased and for a time the development of the mine continued in this area.

Recently the acreage in the second hill became practically worked out. No additional area was avilable except that in the opposite, or third, hill. This was distant nearly three miles from the tipple at Brackenridge, but the steel mills must have coal though hauls were long and grades disadvantageous. The grades on the main haulageway through the second hill were not of the best, and the road as a whole had to be improved considerably before it could be used as a portion of the long haul.



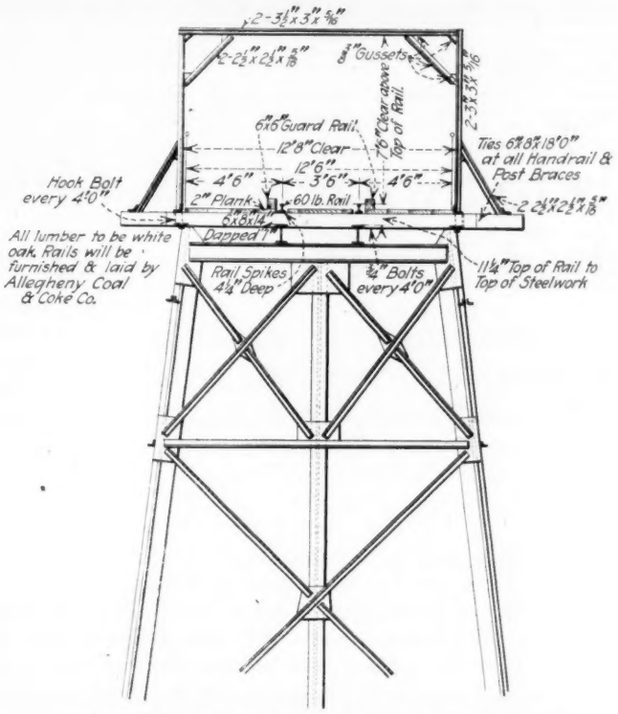
ELEVATION OF LARGER TRESTLE

There are twenty bents, mostly cross-braced and tied together in pairs and surmounted by trusses of Howe and Warren types.

Obviously, one solution to the problem of getting the coal to Brackenridge would have been to abandon all the old workings in the first and second hills and construct a small tipple in the valley between the second and third hills. In this manner the coal could have been shipped over a short spur direct to the steel plant and the mine-car haulage would have been reduced to its lowest limits. The decision to bridge the valley through a distance of nearly 1,000 ft. was reached after it had been determined that by reason of the growing scarcity of railroad cars the construction of a new tipple would not necessarily guarantee a steady supply of coal at the point of consumption.

Viaduct Is 125 Ft. High at One Point

The completed bridge, which was designed and erected by Baton & Elliot, of Pittsburgh, is the largest of its kind in the Pittsburgh district, erected at a cost


6"x6" Guard Rail
12'8" Clear
12'6"
4'6"
3'6"
4'6"
Hook Bolt every 4'0"
2" Plank
60 lb. Rail
Dapped 1"
All lumber to be white oak. Rails will be furnished & laid by Allegheny Coal & Coke Co.
Rail Spikes 4¼" Deep
¾" Bolts every 4'0"
11¼" Top of Rail to Top of Steelwork
Ties 6"x8"x18'0" at all Handrail & Post Braces

CROSS-SECTION OF THE TRESTLE ROADWAY

Only a single track is provided, though a large amount of coal has to be passed over the trestle. With telephonic train dispatching it is possible to get the utmost service from a single track.

of $100,000, it is but a small part of the main roadway soon to be extended to over three miles in length and laid throughout with 60-lb. rails. The bridge itself is of simple construction and shows the Howe and Warren types of truss to good advantage.

Twenty steel bents support the structure, which at one point where it crosses a creek in the outskirts of the town of Tarentum is over 125 ft. high. Eight-inch 11¼ lb. channels; 4 x 3 x ⅜-in. angles and 12 x ⅜-in. plates are used in the make-up of the columns. The lumber in the wooden floor surmounting the trestle is entirely of white oak.

A 6 x 6-in. timber guard rail serves as a protection in the event of a locomotive derailment. The sleepers are 6 x 8-in. timbers 18 ft. long. Over these 2-in. planking is laid, serving as a floor. There is a grade of 0.421 per cent against the loaded trips, but this is not sufficiently great to cause the locomotive any distress.

The grades on the completed roadway are for the greater part in favor of the loads. The first bridge, that spanning the valley between the first and second hills, is 47 ft. higher than the drift opening at Brackenridge. The larger bridge is 37 ft. higher than the smaller one, while the coal in the third hill lies at a higher altitude than did that removed from the second. Thus there is a general grade from the face to the tipple in favor of the loaded cars. In fact it averages about one per cent.

There are few curves on this long roadway, the course to be traversed by each trip being nearly a straight line. The completed haulageway is in the main single-tracked. The trips, however, will be dispatched by telephone from the superintendent's office, so that it will not be necessary for one trip to be held up until another has returned from the tipple.

Four 275-volt 1,000-watt lamp searchlights have been installed on both the small and large bridges. These are arranged in pairs at the ends of each structure. A night watchman is stationed in a shanty situated at one end of each bridge. During the recent strikes of steel workers and miners these bridges were guarded quite diligently lest some crank might attempt destruction.

Inasmuch as the steel mills are entirely dependent upon the coal supply handled over these bridges the practice in the future will be to guard them at all times. The electric lamps mentioned flood the structures with light and make it an easy matter to discern any night prowler. A main haulageway constructed at a cost of several hundred thousands of dollars and valued at even a greater amount by the owning company is a fit subject to merit the attention of two night watchmen.

Actual Possession Necessary for Claim of Adverse Title to Coal in Place

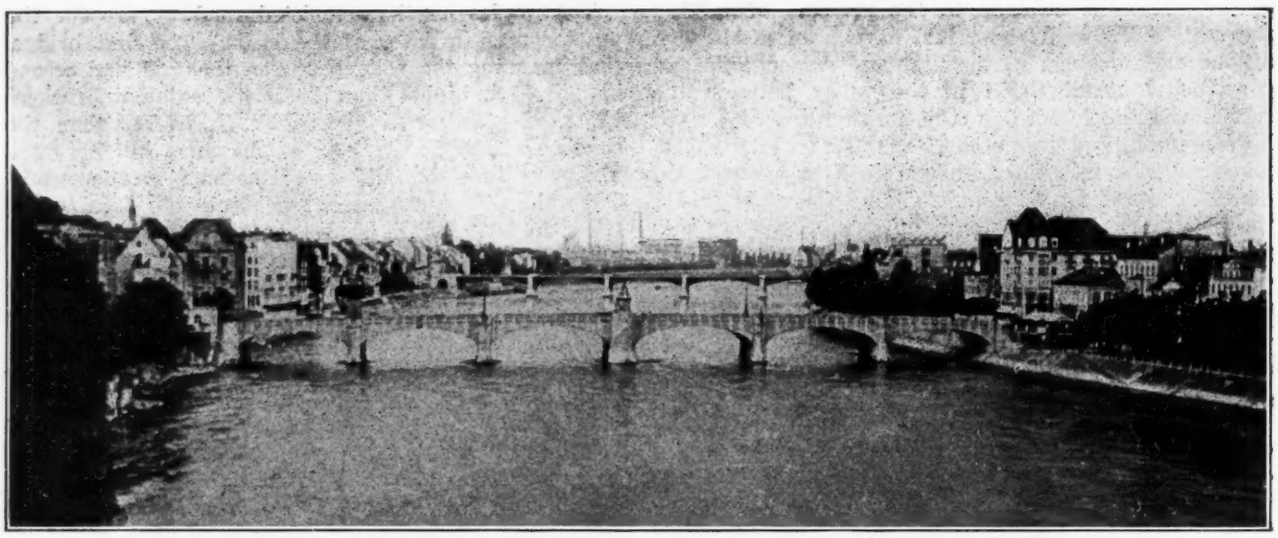
UNDER the laws of Kentucky title to real property cannot be claimed by adverse possession until there has been actual possession of the same under adverse claim of ownership for fifteen years continuously.

An owner of the surface of land cannot base adverse title to underlying minerals, which had been conveyed by his predecessor to a third party, on his possession of the surface and an intention to claim the minerals, his claim not being open and notorious.

Payment of taxes on the land is not such exercise of dominion over the underlying coal as to support a claim of title by adverse possession, nor is the mining of small quantities of coal for domestic purposes under a reserved right any exercise of possession over the remaining coal. (*U. S. Circuit Court of Appeals, Sixth Circuit; Pond Creek Coal Co. vs. Hatfield, 239 Federal Reporter, 622.*)

The World's Rainfall

THE total annual rainfall upon all the land of the globe amounts to 29,347 cubic miles, according to the U. S. Geological Survey, Department of the Interior, and of this quantity 6,524 cubic miles drains off through rivers to the sea. A cubic mile of river water weighs about 4,205,650,000 tons and carries in solution an average of about 420,000 tons of foreign matter. In all about 2,735,000,000 tons of solid matter is thus carried annually to the ocean.



ANOTHER SCENE IN BASLE SHOWING THE RAPIDLY MOVING RHINE, TOO SPEEDY HERE FOR PROFITABLE TRANSPORT

The speed of the river is about six miles an hour. There are no convenient harbor facilities. Thus the larger cargoes are usually transferred at Strassburg and taken to Basle by rail. The river is narrow and at times the water is low.

Shipping American Coals to Switzerland, with Sampling Methods in Use*

Methods of Sampling Here and Abroad, with Information Regarding Swiss Requirements—Description of Handling of Coal by the Northern, or German, Route to Switzerland—Why American Coals Have Difficulty in Finding a Welcome Equal to That Given to Known European Fuels

BY JOSEPH D. DAVIS†
Washington, D. C.

AT THE outbreak of the world war Europe was producing practically all the coal it needed for domestic consumption. Soon thereafter, however, a coal shortage developed not only in the countries at war but also in the smaller neutral states. Practically all the coal mined in Europe was produced by the belligerent nations and the war resulted in a reduction of output, with increased demand at home. Consequently little coal was exported. The neutral states were the first to suffer, and as the war went on the situation became acute, forcing them to the use of inferior grades of combustibles as substitutes for coal.

FIVE OR TEN-YEAR COAL SHORTAGE IN EUROPE

They could obtain little or no fuel from their belligerent neighbors and could not get it from the United States on account of the submarines and the attendant lack of shipping. The allied nations at war suffered a lack of coal because some of their coal fields were occupied by the enemy. The mining properties in northern France were for the most part destroyed by the Germans, and it will be several years before they can be rebuilt and put in condition to produce coal at the normal pre-war rate. France has, of course, gained the coal fields of Alsace-Lorraine which Germany has lost; and Germany also has lost those of Silesia.

It is as yet problematical what effect these changes will have on Europe's coal supply but it seems safe to predict that the output will be considerably curtailed for the next five or perhaps ten years. Lack of man power, of course, is a factor that must be considered, but its effect is difficult to gage.

England, for years a large exporter of coal, came to the assistance of her allies during the war and will be for years to come a large producer of fuel. She has seemingly now, however, adopted the policy of curtailing her exports and conserving her coal supply for use at home. The conditions above enumerated brought about by the war have caused not only nations of Europe who are not producers but also some of the producers themselves to look to America for future coal supply.

Whether or not the demand for American coal in Europe will continue when industry there has recovered from the effects of the war depends largely on three factors: the freight rates, familiarity on the part of European consumers with the excellent qualities of American coals, and the attitude of operators and dealers in this country toward export business.

Freight rates are now abnormally high principally because vessels carrying coal to Europe are unable to obtain return cargoes. When the flow of imports to the United States returns to normal the freight charges

*Published by permission of the director of the Bureau of Mines.

†Mr. Davis writes this article as the outcome of a trip of investigation to find out just what are the needs of the Swiss purchaser, the effect of transportation on the coal and how a sampling and analysis should be made here that would assure the purchaser that the coal received would fill the expectations of the Swiss analyst.

on coal exported can be considerably lowered. It is obvious, however, that the reduction will not be great enough to enable American coals to compete with available European fuel on a price basis alone. American coals can, however, compete with the European product on a quality basis; in fact they have a decided advantage. This is particularly true of steam coals.

Barring the English Cardiff coal, which probably will not be available in large quantities, our semi-bituminous or steam coals will have no competitors as regards quality in Europe. European consumers, however, are not generally aware of the superior qualities of our coals; they must be educated to their value, and American operators and dealers must see to it that standards of excellence for their coals are established and maintained abroad if they wish to get export business.

Swiss Nation Asks Us to Analyze Shipment

I recently had an opportunity to follow shipments of coal from the United States to Switzerland, which has been for the last year an extensive buyer in this country, and to learn first-hand of some of the fuel problems of that country. The Bureau of Mines is authorized by law to inspect and analyze coals exported from this country upon being requested by the purchaser to do so. Such a request was made by the Swiss Government.

Before the war the Swiss were importing largely from Germany. These imports included some gas coals and coals from the Ruhr district containing less volatile matter, as well as to some extent, coals from Holland, Belgium and France. Quite an appreciable quantity of steam coal was imported from England. Some briquets were used, presumably for locomotive firing. Most of these came from the Ruhr field. Little lignite, peat or wood was used. In a word the Swiss were using mostly high-grade fuel.

During the war, however, conditions changed gradually till in 1918 they were getting little high-grade coal and what they did obtain was not up to former standards of quality. Briquets of fuel refuse, peat and lignite were extensively used; in fact every material that could be employed as a substitute fuel was so utilized. Even at the close of hostilities, because of disrupted industrial conditions in the countries at war, the Swiss could not obtain a fuel supply in Europe as in pre-war times. Accordingly they looked to America for coal.

Tracing the shipment of coal from the American port to Switzerland, Fig. 1 shows coal in the yards ready to be run out onto the piers and dumped on board ship. Coal shipped to the Tidewater Exchange is roughly classified and held in readiness for shipment by water. The product of different operators mining the same grade of coal (for example, gas coal) is sent to the same pool. The advantage of this plan is that the shipper always has a quantity of a given grade of coal and can load it on demand. This is an admirable arrangement provided only the classification is so rigid that the purchaser can be assured as to the quality of coal he purchases from a given pool. At present the classification is not as rigid as might be desired. In loading the coal is dumped from the pier into the hold of the ship lying alongside. During this process it may be sampled with ease.

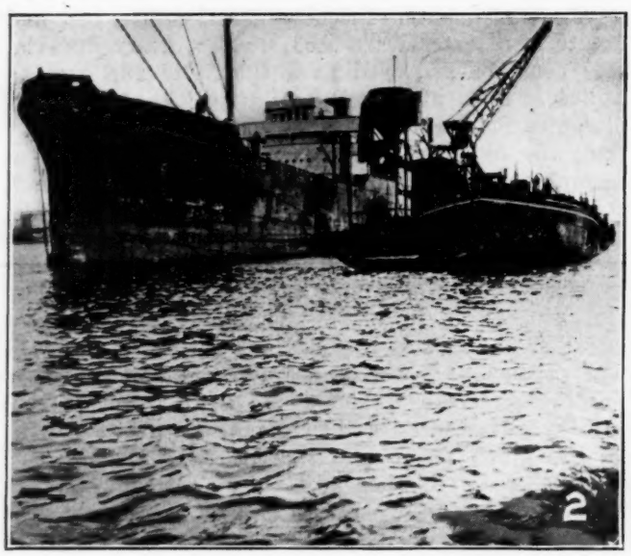
Coal Is Dumped from Railway to Pier Cars

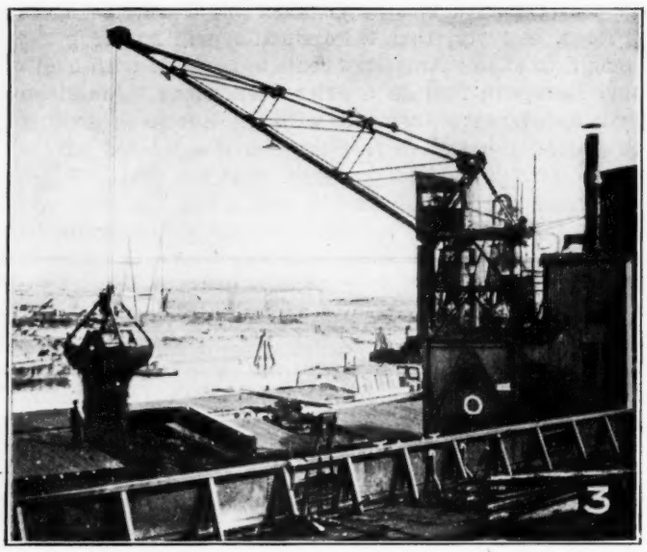
At some terminals it is the practice first to dump the coal from the railway cars into a pier car that holds approximately the contents of two large railway cars. The pier car is provided with two sets of double bottom doors by means of which roughly half the load can be discharged at a time into a chute leading to an open hatchway of the vessel below. While the coal is being dumped, a man whose duty it is to collect the sample, stands at the side of the car and holds a large iron scoop or dipper under the stream of coal as it falls. In this manner a part of the stream (about 60 lb.) of coal is taken during the whole time it is falling. For

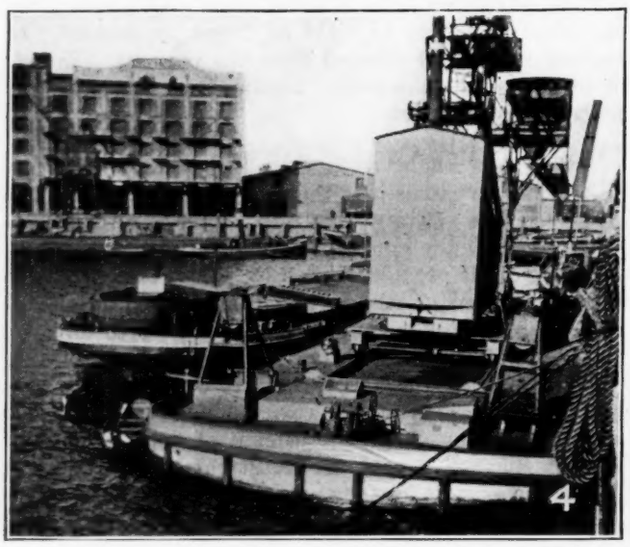
FIG. 1.

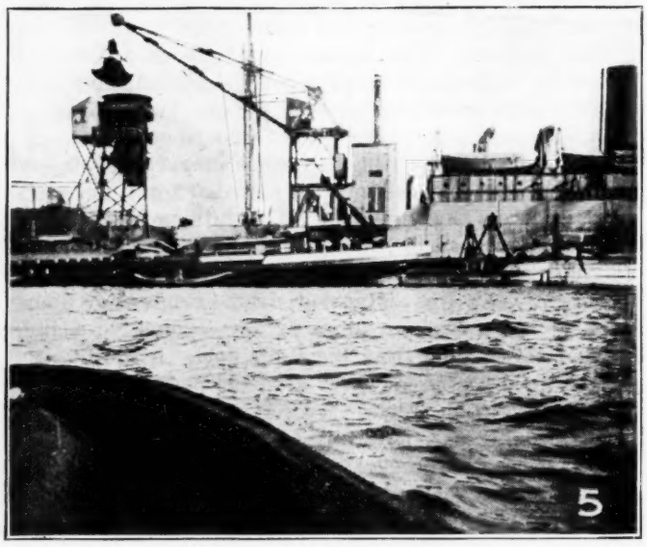
Fleets of Coal in Railroad Yards

Many shippers, amny boats and many grades of coal are bad problems in "Permutations and Combinations" for the railroads to solve. Pooling has done a great deal to relieve a situation that made terminal operation difficult, though much yet remains to be adjusted.









FIGS. 2, 3, 4 AND 5. OCEAN BOAT, DERRICK BARGES AND RHINE BOATS LASHED TOGETHER
Two steam-derrick barges are inserted between the ocean-going craft and the 1,000- to 2,000-ton barges that ply the Rhine propelled by some sort of internal-combustion engine. The rate of discharge will vary from 150 to 160 tons per hour.

full particulars concerning the sampling of coal and the analysis the reader is referred to various publications of the Bureau of Mines.[1]

Two shipping routes have been used in sending coal to Switzerland from the United States. One is by way of the Mediterranean to Genoa, Italy, and thence by rail through the Alps into Switzerland, and the other is by way of Rotterdam, Holland, and thence up the Rhine River to Basle. The latter route has been by far the most used and accordingly will be described here. Assuming that the shipment is from Norfolk, Va., the ocean voyage requires about fourteen days. The ship passes northeast across the Atlantic Ocean, through the English Channel and into the North Sea, thence through the Hook of Holland and up the Maas Channel into one of the many havens of Rotterdam harbor. Here it is anchored and the cargo is discharged into small boats for shipment up the Rhine River.

The method of discharging cargo at Rotterdam is as follows: Two barges on each of which is mounted a steam derrick, are securely lashed to the sides of the vessel (Figs. 2, 3, 4 and 5), while the Rhine boats are lashed to the outside of the barges. The latter are equipped with derricks and grab buckets. The coal is thus lifted out of the hold of the vessel from both sides and discharged into the open hatchways of the Rhine boats. These are river craft of 1,000- to 2,000-tons capacity and are propelled by some form of internal-combustion motor, presumably a Diesel engine. Fig. 6 shows at short range a number of such boats in one of the numerous small havens or canals of Rotterdam.

The rate of discharge will vary, I was told, from 150 to 160 tons per hour. Cargo weights are checked at Rotterdam only by gaging the coal as the compartments in the small boats are filled, and as the coal is dropped from a considerable height, estimates by this method are likely to run low. Fig. 7 shows a number of coal-carrying ships tied up in Rotterdam harbor.

An attempt was made by the shipping agent to sample coal cargoes as they were discharged at Rotterdam, but the gross sample taken was in every case wholly inadequate. Three small gripfuls of coal (Fig. 8) were taken at intervals during the unloading and mixed to form a gross sample of not over 50 lb.

[1]Pope, G. S., "Sampling Coal Deliveries and Types of Government Specifications for the Purchase of Coal," Bureau of Mines Bulletin 63, 1913, 66 pp. Stanton, F. M., and Fieldner, A. C., "Methods of Analyzing Coal and Coke," Bureau of Mines Technical Paper 8, 1913, 42 pp.

These portions were crushed and mixed; the coal was then piled in the form of a cone which was reduced in bulk by the usual method; that is, by quartering and rejecting opposite quarters. The quartering process was then repeated, and the resulting sample, about 10 lb., was sent to the laboratory for analysis.

The analytical procedure was fair, according to American standards, but because a non-representative sample was taken in the first place, results varied widely from those obtained in the U. S. Government laboratory. The results obtained gave only a rough approximation to the fuel value and sampling accordingly was discontinued.

From Rotterdam harbor the small Rhine boats pass up the Maas Channel under the Maas bridges (Fig. 9), and thence through the Waal Channel or the Lek Channel to the Rhine River. By the Rhine the smaller boats (1,000 tons) proceed directly to Basle, Switzerland, when favored by a sufficient depth of water. The larger cargoes and, when the water is low, also the smaller ones, also are transferred at Strassburg, and taken to Basle by rail. It is, of course, cheaper to ship all the way by water, but there are difficulties attendant upon this method. The Rhine channel is narrow and the current swift at Basle (Figs. 10 and 11) and adequate harbor facilities are lacking. I would estimate the current at this point to be about six miles per hour.

Most of the coal imported in Switzerland is purchased by a central organization with offices in Basle. The coal consumers are members of this organization or company and receive their allotments in small shipments by rail. Thus a cargo of 8,000 tons may be divided among as many as ten members, sometimes more. Each member samples the shipment of coal he receives and sends the sample to the Prüfungsanstalt für Brennstoff at Zurich.

In this laboratory analytical work connected with all fuel investigations of the Swiss Government is performed. It was one of the first to put forward the heating value as a basis for the practical evaluation of fuels, and Dr. Constam of that laboratory was a pioneer investigator of the connection between the softening temperature of coal ash and its clinker-forming propensities. The equipment of this laboratory is up to date and the analytical methods followed are similar to those considered standard in this country. The laboratory has been described by Heinrich Trachsler in the *Schweizerische Bauzeitung* of Aug. 24, 1907.

It is perhaps worth while to mention the method of coal sampling followed by this laboratory as compared with that followed by the U. S. Government.

The following is a translation of the instructions issued by the laboratory for sampling steam coal:

Procedure for the taking of a sample: (1) On the integrity of the sample the value of the test for the heating content of the fuel is absolutely dependent. (2) In order to obtain a representative sample a shovelful of coal should be taken from every wheelbarrow load or basketful brought from the car or bunker, and thrown into a box provided with a cover until about 150 kilos (330 lb.) have been collected. (3) From that quantity of coal a sample is prepared as follows:

The fuel is spread out on a clean, level floor and crushed to nut size, mixed and formed into a rectangular pile. It is then divided into four parts by diagonals. Opposite quarters are cast aside and both of the others are again crushed to hazelnut size,

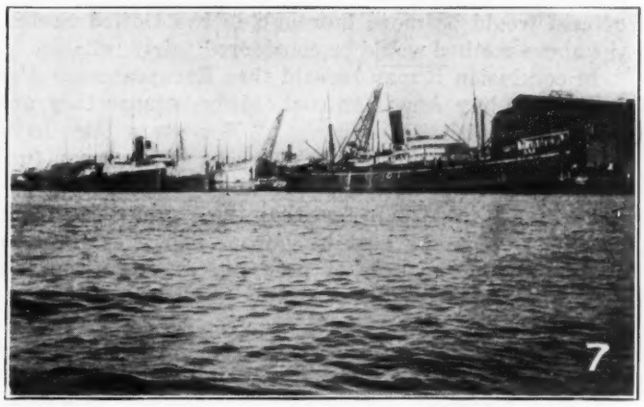


FIG. 6. A FLEET OF RIVER BARGES AT ANCHOR. FIG. 7. COAL CARRIERS IN ROTTERDAM HARBOR. FIG. 8. THREE GRIPS LIKE THIS HELD AN INADEQUATE SAMPLE WEIGHING ABOUT 50 LB. FIG. 9. UNDER THE MAAS BRIDGES TO THE WAAL OR THE LEK CHANNEL TO THE RHINE

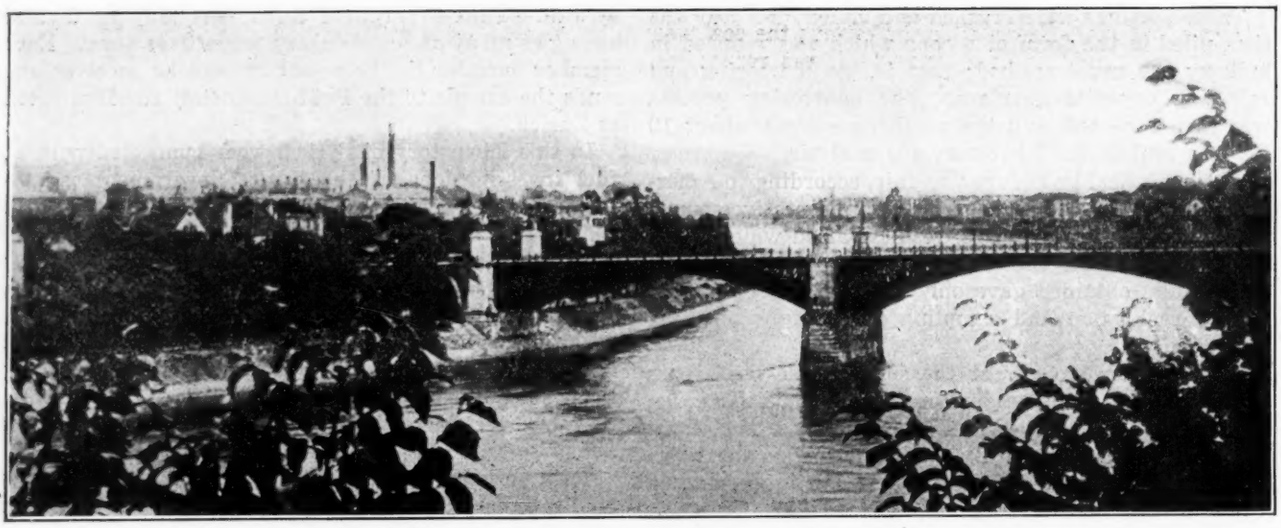


FIG. 10. BASLE, THE HEADQUARTERS OF THE CENTRAL ORGANIZATION WHERE THE COAL IS RECEIVED AND DISTRIBUTED

Coal in a consignment is divided up among several members of the purchasing syndicate. Every recipient makes his own sample, and sends it to the testing laboratory for coal established in the city of Zurich.

mixed and again divided. Opposite quarters are again cast aside and those remaining retained. This crushing and dividing process is continued till about 10 kilos (22 lb.) remain. This coal is placed in any available airtight container (soldered tin boxes and the like) and sent to the laboratory.

It happened that ten or more samples taken as indicated above with the resulting analyses averaged represented a cargo of 8,000 tons. While in general the crushing of samples taken to represent such a quantity of coal would be more thorough in the United States, the above method would be considered fairly reliable.

In conclusion it may be said that Europeans are disinclined to buy American coal chiefly because they are unfamiliar with its properties. For years they have been accustomed to use certain grades of European fuel and have become thoroughly familiar with their properties; much more so in fact than the average American consumer with the coal he burns. They hesitate to change and do so only of necessity arising from the fact that the old source of supply is exhausted or nonproducing.

They have to pay more for American coal than they have been accustomed to pay for the European product, and American coal is not quite so well prepared. They cannot now buy American coal on the specification basis with absolute assurance of its origin, as in the case of the fuels with which they were formerly supplied. Their viewpoint is somewhat different from that of the average American fuel user.

Europe Wants a Well-Sized, Lustrous Coal

The American is not so much concerned, for instance, with the exact sizing of the coal and the luster means little to him, whereas with the European customer these considerations have some importance. It is an unfortunate characteristic of the American selling agent that he refuses to pay attention to requirements for which he can see no reason, and does not consider it incumbent on him to please regardless of the, to him, apparent lack of reason for this or that requirement. He is content with supplying a commodity that seems to him just as good.

It is believed that this is a mistaken attitude, that we should endeavor to please foreign customers whether we expect to continue trade with them or not. By studying their viewpoint and familiarizing ourselves with their requirements we may gain knowledge which will be of service to us as applied to our own practice. Particularly is this true as regards what we may learn concerning the proper methods of conserving our fuel resources. Europe's fuel beds are not as extensive as ours and consequently Europeans are farther advanced in the application of methods for avoiding fuel waste. They know more about their coals and they check up the quality of the delivery product much closer than we.

Should Inspect Coal for Home and Abroad

Obviously we should have some system of inspection whereby the smallest domestic consumer as well as the big foreign buyer can at any time obtain reliable information concerning the origin and quality of the coal he buys. It has been said before that such an inspection system need not involve large expense. It may now be added that it is immaterial through what agency it is carried out so long as it is effective.

The question of whether it is better to reserve our fuel for use at home than to export it is another matter. So long as we do export coal we should put our best foot forward, establish the reputation of the American product, and, what is more important, learn what we may from our foreign customers as to what measures applicable to our conditions will provide for the conservation and effective distribution of our coals.

North America Third in Mountain Heights

NORTH America ranks third among the continents in the heights of mountains. Asia has Mount Everest of the Himalayas, which stands 29,002 feet above sea level, and South America has Mount Aconcagua, of the Andean system, which is 23,080 feet high. North America comes next with Mount McKinley, in Alaska, 20,300 feet according to the U. S. Geological Survey, Department of the Interior, and Africa is fourth, with Kibo Peak, 19,320 feet. Mont Blanc, Europe's highest mountain, is 15,782 feet high, which is more than a thousand feet higher than any mountain in the United States outside of Alaska.

Three Methods of Abusing Coal-Cutting Machines That Your Men Should Avoid

Putting a Jumper on One of the Shunt Coils, Making the Bits Like Miners' Picks, and Distributing the Lugs Improperly—Are Your Men Thus Mishandling Your Cutters?

By N. D. Levin
Columbus, Ohio

MANY operators of mining machines are in the habit of putting a jumper on one of the shunt coils in order to speed up the motor. This practice is one much favored in certain districts by breast machine runners. I know men who have run breast machines for many years and who admit that they have always used a jumper, and insist that it does no harm to the motor.

When a jumper is put on the terminals of a shunt coil the current takes a short path through the jumper, and the coil is cut out so that no current flows through it. In consequence no magnetism is set up by the coil that has a jumper on its terminals. On the other pole the shunt coil is setting up magnetism that pulls the armature sidewise toward the pole piece bearing the live coil. This pull is considerable—roughly speaking it is about a ton; it may be more or less, depending upon the size of the motor.

In the accompanying illustration a breast-machine motor was turned on edge, the end plates carrying the bearings were removed, the armature was laid loose in the bore with some paper underneath so as to make an air gap about the same on the top and bottom. A locomotive bumper was hung on each end of the armature shaft, and a man placed on each bumper. When a jumper was placed on the lower shunt coil, the armature instantly slammed up against the top pole piece, lifting the bumpers and the two men, to the great surprise of the latter, who wanted to bet that the armature would not move. As a matter of fact, if ten men could have been placed on the armature, is would have lifted them all.

It is evident that a motor having an armature running at from 800 to 1,200 r.p.m. with such a great unbalanced side pull is being greatly abused. This one-sided pull springs the shaft, causing the hole in the armature sleeve to become enlarged, the shaft to break, bearings to wear out, the armature to rub on the pole pieces, with consequent tearing up of core and winding. Furthermore the unbalanced field causes sparking and consequent brush and commutator trouble.

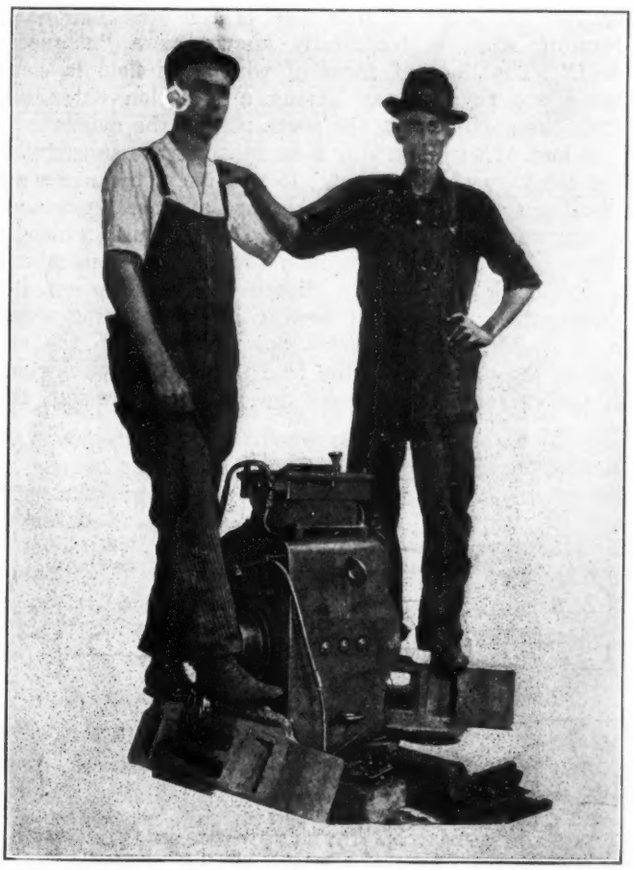
When one field coil is short-circuited by a jumper the total resistance of the shunt coils is, of course, cut down half; therefore the current through the remaining field coil is doubled. The wire in the coil is too small to carry this current safely. This causes the windings to heat and eventually burn out.

The crude test above described is here recounted in the hope that some mine electrician who is having trouble with undercutter motors will make this same experiment in the presence of the machine runners. It may possibly bring them to realize what they are doing when they put a jumper on the terminals. If this will not have the desired effect, the field coils can in some motors be turned around so that the machine runner cannot readily get at the terminals, or it may be possible to put some kind of protection over them so that any tampering with the machine by the runner may be detected.

Bits That Might Pick but Cannot Cut

Another abuse that coal-cutting machines are subjected to is that arising from poorly shaped bits. Today in most mines so-called "pick-point" bits are used. The word pick-point is unfortunate, as many blacksmiths sharpen the bits as they would a miner's pick. I have often thought that the reason they do this is that they have been told to make pick-point bits.

A mining-machine bit is a cutting tool, but the miner's pick is not. A pick enters the coal in a direction lengthwise of the tool, while a mining machine bit



TESTING THE EFFECT OF PUTTING A JUMPER ACROSS TERMINALS OF A SHUNT COIL

To prove that short-circuiting a shunt coil would cause the armature to be thrust up against its pole piece, two men tried to hold the armature down with the help of two locomotive bumpers. Their failure was convincing evidence to them of the impropriety of such a tampering with the coils. A considerably heavier weight would have been lifted in the same manner. Ten men could not have resisted the lifting force.

engages the coal at a marked angle from its length. A mining machine bit must be provided with a cutting edge; its general shape is not highly important, but one thing should always be kept in mind, namely, that the rear side of the bit must be thinner than the front side. If not, the bit will rub instead of cut.

Put the Chain Lugs in the Right Place

It is not unusual to find mining machines in which the motors are burning out and the various parts of the machine breaking because of chains being improperly assembled. The trouble ordinarily occurs in this way: When chain lugs have to be replaced because of broken set screws or some other cause, care is not taken to put in the same kind of a lug that was taken out. Instead the first lug that happens to be handy is slipped into place.

This will not do, because there are only a few lugs of each kind, and all are needed. If we consider that a shortwall machine has about forty bits altogether in its cutting chain and if there are seven positions, there are not more than five or six of each kind, and these should be distributed evenly along the chain. If not, the machine will be overloaded, causing breakage of the rope, burning out of motors and severe wear and tear on the mechanism in general.

How a Direct-Current Motor "Motes"

Armatures Revolve Because of a Difference in the Intensity of the Magnetic Flux Upon Opposite Sides of the Armature Conductors—The Characteristics of a Motor Determine the Purposes for Which It Should Be Used

By H. H. Startzman*
East Pittsburgh, Pa.

EVERYONE is familiar with the attraction that the little permanent magnet, made in the form of a horseshoe, has for small bits of iron or steel. This force of attraction is due to the fact that an area between its ends or pole tips is rendered magnetic, forming what is technically known as a "magnetic field." The lines of force of which the field is composed are regarded as having a direction extending from the north pole to the south pole of the magnet.

A loop of wire carrying a current may be substituted for the horseshoe magnet. It will exert the same attraction for iron and steel, because a current produces a magnetic field about the conductor through which it flows. The lines of magnetic force in the field about a conductor travel in a direction depending on the direction of the current flowing in it. Looking along a conductor, if the current flows away from the observer the direction of the field produced is clockwise; if the current flows toward the observer, however, the field is in the opposite direction, or counter-clockwise.

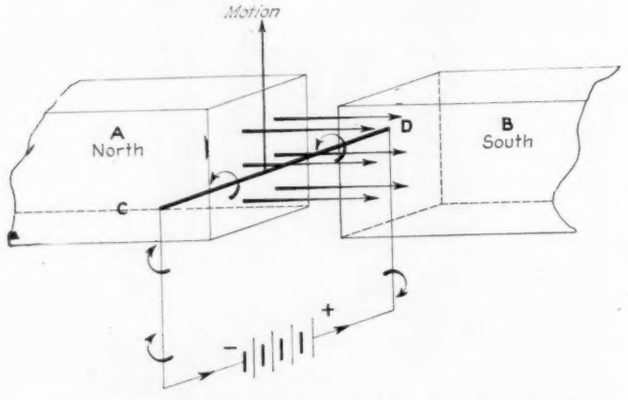


FIG. 1. CONDUCTOR MOVES TOWARD WEAKER FIELD
A and B are the poles of a magnet and the "magnetic flux" is represented by the arrows as passing from the north pole (A) to the south pole (B). If a conductor (CD) carrying a current is placed in this magnetic field it will create a magnetic field around itself in such a way that it will reinforce the magnetic flux below the wire and oppose the magnetic flux above. The magnetic field below the wire will thus be greater than the field above it, and the wire will tend to move in the direction of the weaker field, as the arrow marked "Motion" shows.

If a conductor is moved through a magnetic field, such, for instance, as that existing between the poles of a magnet, an electromotive force will be induced in it. The strength of the induced electromotive force is proportional to the rate at which the conductor travels or to the product of the speed at which the conductor is moved and the density of the magnetic field being cut. The direction of the electromotive force induced in the conductor can be determined by the application of Fleming's "three-finger right-hand rule." This states that if the thumb, the forefinger and the middle finger of the right hand be placed at right angles to one another, the thumb pointed in the direction of motion of the conductor relative to the magnetic field and the forefinger in the direction of the lines of force, then the middle finger will point in the direction of the induced electromotive force.

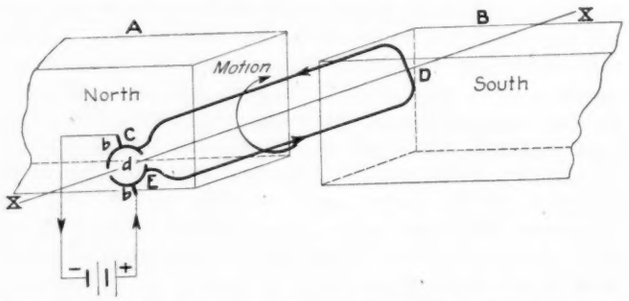


FIG. 2. WHEN THE CONDUCTOR GIVES PLACE TO A LOOP
The single conductor in Fig. 1 is replaced by a loop (CDE) with a segment commutator (d) and brushes (b.b.). The current goes in an opposite direction on opposite sides of the loop. Consequently one side strives to go up and the other side to go down, and rotation results along the axis (XX). When the loop has made a half turn what has been the top half of the loop will be at the bottom and the brushes will have reversed the current of electricity in the loop. For this reason while the current in the line outside the armature will still be in the same direction the current in the armature loops or coils will be reversed. We shall have a direct driving current therefore in the line, though the current will be reversed in the motor.

In Fig. 1 A and B are the poles of a magnet between which exists a magnetic field. Suppose now that a conductor, *CD*, carrying a current, and hence having a magnetic field about it, is placed in the magnetic

*Motor engineering department, Westinghouse Electric & Manufacturing Co.

field between the poles, *A* and B. The direction of the lines of force about the wire and between *A* and *B* are as shown in the figure. The field around the conductor produced by the current flowing through it adds to the intensity of the field already existing between the poles of the magnet below the conductor and opposes the existing field due to the magnet above the conductor. The resultant field is then denser below the conductor and weaker above it. As the lines of magnetic energy always tend to straighten out, a force is exerted on the conduction tending to move it in an upward direction, as shown.

What Causes Counter Electromotive Force

As the conductor moves upward it will cut lines of magnetic force and have induced within it an electromotive force or voltage. By applying Fleming's right-hand rule the induced electromotive force is found to be in such a direction as to oppose the electromotive force sending the current through the conductor. Now it is obvious that it is not only the resistance but also this opposing or "counter electromotive force" that limits the flow of current in a conductor being moved through a magnetic field by a current flowing within it. A motor at rest has no counter electromotive force.

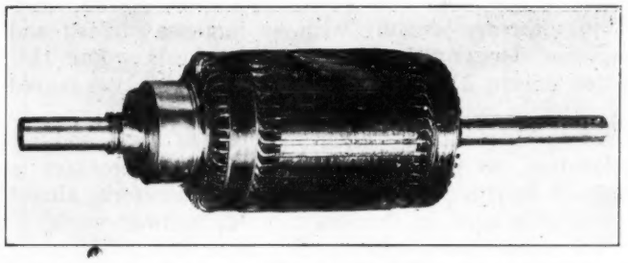


FIG. 3. SEVERAL LOOPS MAKE UP AN ARMATURE

Many of these loops or, rather, coils compactly bound together make an armature. At the point where the current will be of maximum turning effect it is delivered from the line into the armature through the brushes. Thus each coil is energized and reacted upon in turn, and the rest of the armature revolves with it.

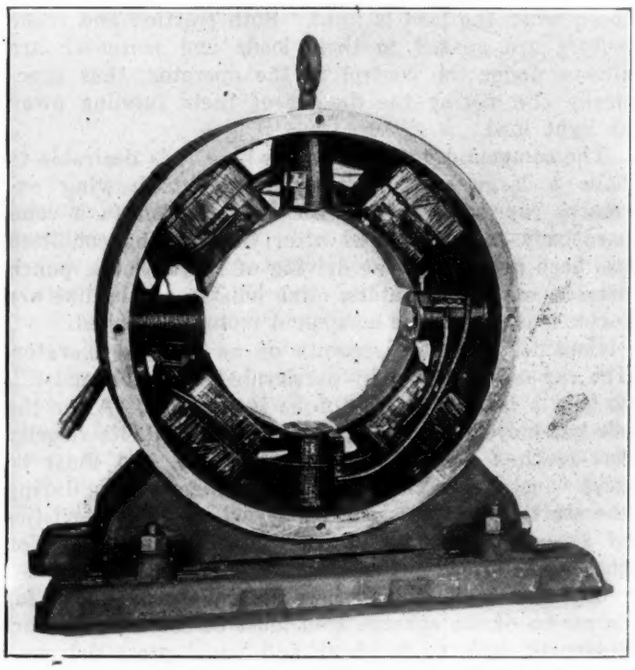


FIG. 4. ELECTRO MAGNETS IN MOTOR FRAME

Instead of just two poles and two brushes, four main poles are quite frequently used with commutating poles between them which keep the magnetic flux from varying with the changing intensity of the armature field. The use of these commutating poles with windings in series with the armature and whose magnetic field is proportional to the armature current makes it unnecessary to shift the brushes.

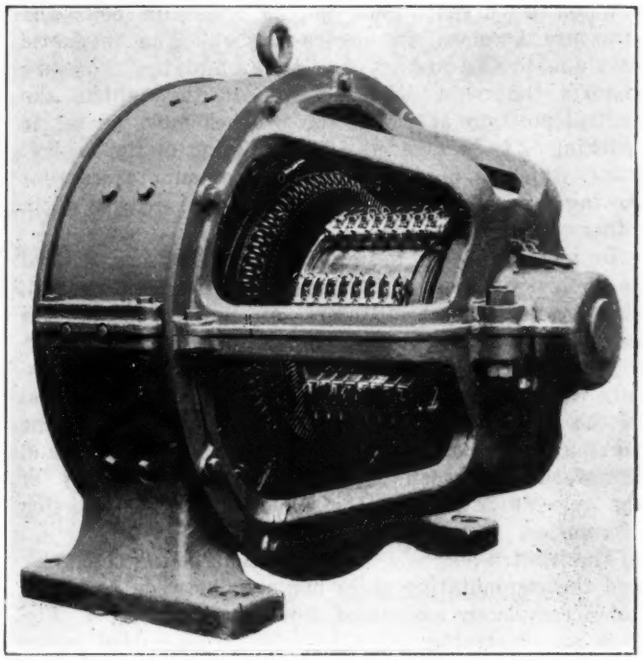


FIG. 5. COMPLETE DIRECT-CURRENT MOTOR

Note the brushes on the commutator. These take the current from the line in a constant direction and they pass it on to the coils, but since the coils are revolving the current flow within them is now in one direction, now in another, as the terminals are alternately presented to the brushes.

A schematic diagram of a simple motor is shown in Fig. 2. The single conductor of Fig. 1 is replaced by a loop, *CDE*, connected to a source of current through the segment commutator, d, and the brushes, bb. As the current is flowing in opposite directions in the two sides of the loop, one side will move up and the other down. The result is that the loop will rotate about the axis, *XX*. The function of the commutator, d, and the brushes, bb, is to keep the flow of current always in the same direction as long as the conductor is cutting lines of magnetic force or flux in the same direction and to reverse the current as soon as the conductor starts to cut flux in the opposite direction.

In this manner the force tending to rotate the coil about an axis is always kept in the same direction. The rotating element or "armature" of a commercial machine has a number of loops similar to the one shown in Fig. 2 wound in slots on the surface of a laminated steel cylinder, the ends or leads of all the loops being connected to commutator bars. Fig. 3 shows the complete armature of a commercial machine.

Brushes Are Set Where E.M.F. Is Zero

As stated above, the function of the commutator and brushes is to keep the flow of current in an armature coil always in the same direction as long as the coil is cutting flux in the same direction and to reverse the current as soon as the coil starts to cut flux in the opposite direction. This process is called "commutation." Since the direction of the flux relative to the coil reverses as the coil rotates so also must the induced electromotive force reverse its direction. This is the "neutral" point or the position on the commutator where the brushes must make contact if sparking is to be prevented.

When a current flows in the armature coils the armature becomes an electro-magnet. The magnetic field due to the current flowing around the armature distorts the main field and this in turn shifts the neutral position at which the brushes must be set if sparking is to be avoided. This shifting of the neutral point, which is proportional to the amount of current flowing around the armature, can be taken care of in either of two ways.

In motors of old design the brushes were shifted as the armature current changed in order to keep them always on neutral. Motors of newer design are equipped with electro-magnets, known as "commutating poles," whose winding is in series with the armature winding, thus always producing a flux proportional to the armature current. The flux produced by the commutating poles keeps the neutral position, and therefore the brush setting constant, regardless of the current flowing in the armature or its direction of rotation.

The electro-magnets, used as field poles, the yoke, and the commutating poles mounted between the main poles, completely assembled, are shown in Fig. 4. Fig. 5 is an illustration of a completely assembled motor of up-to-date design.

There are four types of direct-current motors, differentiated by their characteristics and the connections of the field or exciting circuits. These four types are the shunt, series, cumulative compound, and differential compound. The single field circuit of the shunt motor is connected across the line in parallel with the armature. The single field circuit of a series motor is connected across the line in series with the armature.

The cumulative compound motor is a combination of the shunt and the series motors. It has two field circuits, one in parallel with the armature and one in series with it. The current flows in the same direction in both field windings and the intensity of the resultant field is the sum of the fields due to each winding. The differential compound motor has field windings similar to those of the cumulative compound motor, but the currents flow in opposite directions. The intensity of the resultant field is then the difference between the fields produced by each winding. The differential compound motor is seldom used and nothing further concerning it will be said here.

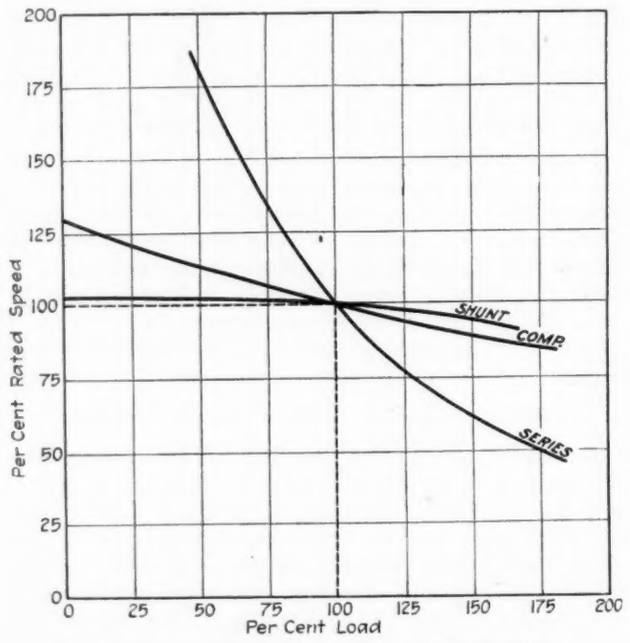


FIG. 6. SPEED-LOAD CHARACTERISTICS

Note how the series motor with a 50-per cent load has almost 200 per cent of rated speed while at 75 per cent of overload it is running at less than 50 per cent of the speed for which it was designed, whereas the shunt motor keeps steadily pounding along almost as speedily under heavy load as light load but using much current to get this result whenever the load is heavy, either from steady overloading or the need to get up speed.

In Fig. 6 is shown the speed-load characteristics of the shunt, series and compound motors. For the sake of comparison all the three machines representing their respective types were chosen so as to have the same full-load speed and rating. The shunt motor is inherently a constant-speed machine, the speed falling off only a few per cent between no-load and full-load. Service requiring practically constant speed, regardless of the frequency or magnitude of the changes in torque, such as the driving of line shafts, machine tools, grinders, drills, lathes, etc., are suitably accomplished by shunt motors.

The series motor is well adapted to heavy starting duty, because for any torque greater than the full-load value it takes a smaller current from the line than either of the other two types. The speed of the series motor decreases rapidly with an increase of load and becomes dangerously high at light loads. For this latter reason a series motor should always be geared or directly connected to the load it is to carry. In traction service the torque required to start and accelerate a car is much greater than that necessary to keep it moving. Series motors are, therefore, almost universally used in this country for railway work.

The same characteristics that make the series motor well adapted for traction service also make it suitable for crane service. The motor is able to develop a large starting torque without taking an excessive current from the line; it also operates at a slow speed when the load to be lifted is heavy and runs at a high speed when the load is light. Both traction and crane motors are geared to their loads and moreover are always under the control of the operator, thus practically eliminating the danger of their running away at light load.

The compound motor is used where it is desirable to have a large starting torque without drawing excessive current from the line, in addition to a comparatively constant speed after the running condition has been obtained. The driving of rolling mills, punch presses, express elevators, mine hoists and the like are services to which the compound motor is applied.

Consider the requirements of an express elevator. The car must be rapidly accelerated from a standstill, so that a large starting torque is required. After the car has moved through approximately 20 ft. its velocity has reached about 500 ft. per minute, and must be kept constant at this value. In other words, during the starting and accelerating period the characteristics of a series motor are desirable, yet after acceleration the characteristics of a shunt motor are needed.

In some applications where a frequent peak load far in excess of the average load must be carried for short intervals, such as in shear and punch-press drives, a flywheel is placed between the motor and the load to take the peak load off the motor. As the load comes on, the motor slows down and the flywheel gives up some of its energy. As the load decreases, the motor tends to increase its speed, giving up energy to the flywheel.

Coal and Water in the United States Compared as Sources of Power

The West Has Greater Undeveloped Reserves, but the East Has Ample Supplies — Both Kinds of Power Are Used Near Source — Liquid Fuel Not Likely To Be Important Factor

BY R. S. MCBRIDE
Washington, D. C.

FUNDAMENTALLY today we have no problem greater than the problem of fuel and power supply. Energy from water power or fuel is essential to every industrial operation, and for our domestic comfort and safety these energy resources are just as important. It is of greatest concern, therefore, to determine where the sources are and what is their relation to the present demand.

We all know that bituminous coal is the basic fuel supply. It forms 80 per cent of the solid fuel used and its importance is continually increasing. It is safe to assume, therefore, that in general our problem in the future is to be a bituminous coal problem since the domestic demand will practically always absorb the bulk of the anthracite produced. The liquid fuel market will not be an appreciable factor in our industrial affairs either, for the supplies are far less than demand for uses other than industrial fuel. Similarly our natural gas resources are nearing exhaustion, and are no longer, therefore, an important factor in the energy field.

Coal is one of the lowest grade classes of freight which our transportation systems handle. Since it is impracticable to haul coal long distances the location of the source in relation to the point of utility is of greatest importance. In the accompanying diagrams, prepared by Mr. E. C. Merrill, chief engineer of the Forest Service, an effort has been made to bring out in a convenient form the relation between the source of supply and the point of use of bituminous coal, and in contrast with these to show the water-power possibilities of the country and the corresponding present demand for all classes of power.

The distribution of the coal reserves is the best evidence of what necessarily will be our resource for extended periods of the future. The data in Table I, from M. R. Campbell, of the Geological Survey, give us a reliable and valuable guide in this particular. For convenience the states have been grouped in this table by districts corresponding to the census classifications.

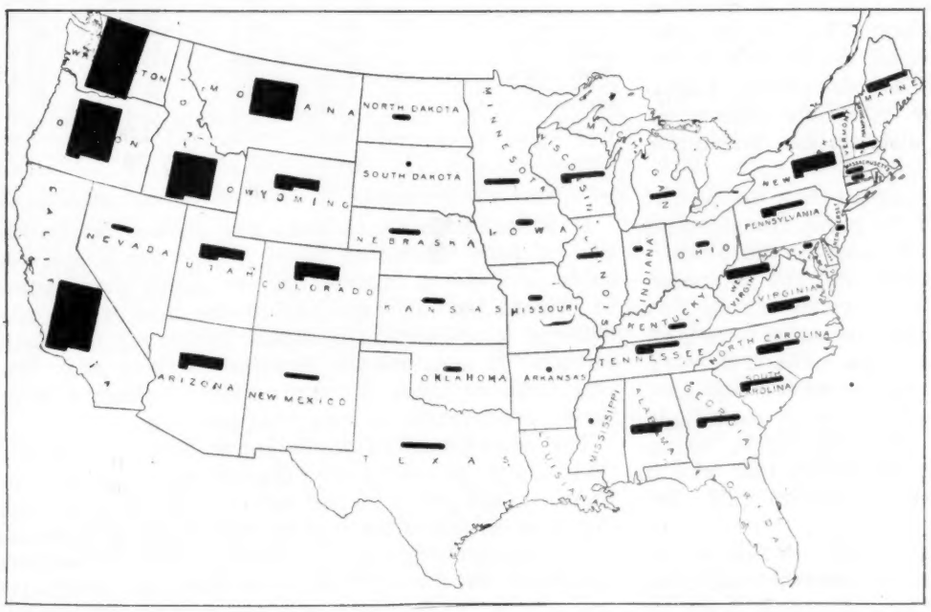


FIG. 1.

Water Power Resources

The black areas represent proportional parts of the estimated total of 54,000,000 hp. The Rocky Mountain and Pacific Coast states have the largest share, with the Atlantic Coast second.

The reserves of coal in billions of tons and the percentage of the total which it is estimated exists are shown for each district. Assuming the present rate of consumption to continue we find a surprising range in the number of centuries of life of each coal field. Reserves in Pennsylvania are adequate only for a period of six centuries at the present rate of production, whereas in the mountain territory of the West 330 centuries would be required at the present rate of production for complete exhaustion of these resources.

Naturally these figures are only approximate at best, but they afford a significant fact in respect to the ultimate location of our energy reserves. Especially is it interesting to compare these figures with the distribution of water-power resources, the other principal future source of our energy. Fig. 1, showing the distribution of water-power resources, shows that these

also lie principally in the West. However, we do not venture any prophecy that this means that the West is to dominate industrially in the immediate future, for a period of centuries is involved here, not a period of a few years. The present rate of production of coal in each of the States is shown in Table 2.

It is to be expected that most of the fuel would be used near the principal industrial centers. For example, we find that 11.6 per cent of all the coal produced in the country is used in Illinois; that 5.4 per cent is used in New York, and that 5 per cent is used in New England.

The contrast between the distribution of hydraulic resources and primary power installed is shown by Fig. 3. In this case we see that the demand is quite predominantly in the northeastern part of the country, whereas the mountain and Western states include the principal hydraulic resources. A somewhat similar contrast would be found if we were to compare the present current use and reserves of coal. Therefore power and coal are not, as some have claimed, supplementary throughout the country, with coal available in the East and power available in the West. The fact is quite the contrary, for the West includes the large majority of the resources of both coal and water power. Fortunately this is not a matter for immediate concern, as the reserves in the Eastern districts are ample for some centuries to come.

Coal is such a low-grade commodity that we do not transport it great distances. If we group the states in various parts of the country and add up the production of coal within these districts and the estimated consumption of coal for the same territory, we find the result shown in Table 2. Here the states have been grouped in the same manner as in the Table 1, showing the coal reserves. In almost every case we find that the total production is of about the same magnitude as the estimated consumption. In other words, taking a group of states together we can expect that within their borders they produce about enough solid fuel to supply their own needs.

Of course, there is considerable traffic in fuel across these arbitrary boundaries, but the general conclusion holds that coal does not move long distances from its source to the point of use.

TABLE I. BITUMINOUS COAL RESERVES OF THE UNITED STATES

(Data from Marius R. Campbell, U. S. Geological Survey, as reported to International Geological Congress, Toronto, 1912.)

Section of U. S.	Reserves: Billions of Tons	Reserves: Per Cent of Total	Life at Present Rate of Use (Centuries)
New England	None	0	0
N. Y., Pa., N. J.	102.2	5	6
South Atlantic	166.3	7	15
North Atlantic	327.1	15	20
South Central	196.5	9	30
Northwestern	129.9	6	60
Southwestern	58.5	3	6
Mountain	1,178.5	52	330
West Coast	58.9	3	140
Totals	2,217.9	100	40

TABLE II. DISTRIBUTION OF PRODUCTION AND CONSUMPTION OF BITUMINOUS COAL BY DISTRICTS

(Data from Geological Survey. Consumption estimated on assumption (1) of total use equal to total production and (2) of total use, including railroads and bunker fuel in same proportion as use for other purposes besides railway and bunker.)

Section of United States	Production (1918): Millions of Net Tons	Production (1918): Per Cent of Total	Estimated Consumption: Millions of Net Tons	Estimated Consumption: Per Cent of Total
New England	0	0	28.9	5.0
N. Y., Pa., N. J.	178.5	30.9	168.9	29.1
South Atlantic	104.7	18.0	46.4	8.0
North Central	167.3	28.9	197.9	34.2
South Central	57.6	10.0	37.5	6.5
Northwestern	22.2	3.8	59.8	10.3
Southwestern	9.3	1.6	11.1	1.9
Mountain	35.4	6.1	23.7	4.1
West Coast	4.1	0.7	4.9	0.9
Totals	579.1	100.0	579.1	100.0

It is impracticable to make any general interpretation of such figures as these. They are a splendid guide in general matters, but in detail they cannot be pressed too far, especially in the case of the estimates as to resources, for no such figures can be exactly correct. It is important, however, to bear such general facts as these in mind when considering long-period development of industrial activities.

The development of water power under the legislation recently passed by the Congress may have some influence on the power market and it is not at all unlikely that in a few years the super-power project will assume definite proportions and be a factor in the northeastern section of the country. Even in this large enterprise, now only in the making, water power is not expected to play an important part.

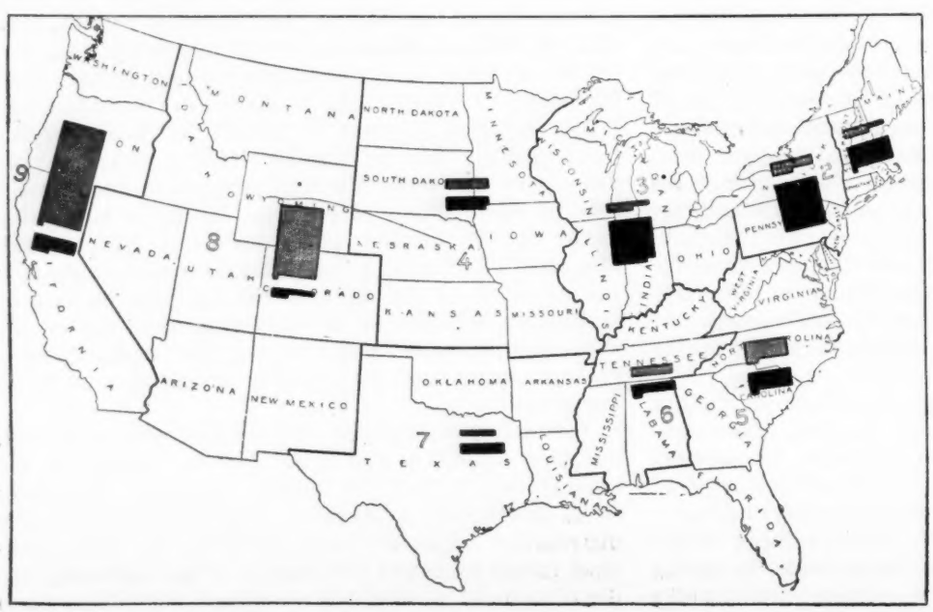


FIG. 2

Hydraulic Resources and Primary Power

The dotted areas represent proportional parts of the total hydraulic resources and the solid areas proportional parts of the developed primary power except railroad locomotives.

Costs of Coal Production During April Issued

Federal Trade Commission Report Indicates General Areas Maintained Relative Positions in Margin Return—Eastern Adjacent Region Obtained Higher Margin Than in 1918—April Output Below Average for First Quarter

TO THE spot buyer of bituminous coal the costs of producing coal are not as interesting today as market prices. Detailed statistics of costs of production and of sales realizations from representative producers of bituminous coal for April, 1920, as recently compiled and published by the Federal Trade Commission, are of value, however, in showing what is transpiring in the industry and to what extent the high prices charged for fuel coal influence the average dollars per ton realized by the coal operator. For the month of April 812 coal operators, with a total production of 8,824,154 net tons of commercial coal—that is, coal sold—reported to the Federal Trade Commission. The production of this group of voluntary reporters was about one-fourth of the total output in the United States, as estimated by the Geological Survey.

The summaries published are (1) the cost of labor, (2) the cost of supplies, and (3) the general expense (or overhead) involved in mining the coal, bringing it to the surface, preparing it for market, and placing it on railroad cars for shipment. The total of these three costs is (4) the f.o.b. mine cost shown by the commission.

These cost figures do not include selling expenses, interest on borrowed capital, or allowance for income and excess profits taxes. The difference between the sales realization and the f.o.b. mine cost per ton is the "margin." Not all of the margin is profit. In order to arrive at the amount available for income and excess profits taxes, dividends or surplus, there must be deducted certain items, such as selling expenses and interest on borrowed capital, and there must be added

TABLE I. APRIL, 1920, SALES REALIZATION AND REPORTED COSTS OF 812 OPERATORS AND THE YEAR 1918 SALES REALIZATION AND REVISED COSTS OF 2,482 OPERATORS, BY GENERAL COMPETITIVE REGIONS

	April, 1920 — Reported Costs per Ton							Year, 1918 — Revised Costs per Ton						
General Competitive Regions	No. of Operators	Sales Realization per Ton	Labor	Supplies	General Expense	Total F.O.B. Mine	Margin per Ton (1)	No. of Operators	Sales Realization per ton	Labor	Supplies	General Expense	Total F.O.B. Mine	Margin per ton (1)
Central Competitive "Interstate" (2)	260	$3.02	$1.90	$0.29	$0.35	$2.54	$0.48	765	$2.45	$1.39	$0.25	$0.26	$1.90	$0.55
Eastern Adjacent (3)	228	3.51	1.94	.29	.42	2.65	.86	966	2.81	1.45	.28	.32	2.05	.76
Western Adjacent (4)	45	2.92	2.03	.30	.31	2.64	.28	138	2.75	1.75	.26	.26	2.27	.48
Southern Appalachian (5)	111	3.44	2.24	.39	.46	3.09	.35	288	2.81	1.61	.29	.36	2.26	.55
Southwestern "Interstate" (6)	99	3.68	2.67	.35	.53	3.55	.13	171	3.13	2.15	.25	.34	2.74	.39
Rocky Mountain (7)	68	3.19	2.11	.30	.41	2.82	.37	154	2.73	1.63	.26	.30	2.19	.54
United States	812	$3.26	$2.04	$0.31	$0.41	$2.76	$0.50	2,482	$2.65	$1.49	$0.26	$0.29	$2.04	$0.61

(1) "Margin" is not the same as profit.
(2) Includes all of Illinois, Indiana, Ohio, and the Southwest District of Pennsylvania.
(3) Includes all of Maryland, West Virginia, Virginia, and the Central District of Pennsylvania.
(4) Includes all of Michigan, Iowa, and District No. 1 of Kentucky.
(5) Includes all of Alabama, Tennessee, and Districts Nos. 2, 3, and 4 of Kentucky.
(6) Includes all of Missouri, Kansas, Arkansas, Oklahoma, and Texas.
(7) Includes all of Colorado, New Mexico, North Dakota, Montana, Wyoming, Utah, and Washington.

TABLE II. SALES REALIZATION AND REPORTED COST PER TON FOR 590 IDENTICAL OPERATORS, BY GENERAL COMPETITIVE REGIONS

	Year 1918						First Quarter, 1920							April, 1920						
General Competitive Regions	Number of Operators	Average Monthly Production, Tons	Sales Realization	Revised F.o.b. Mine Cost	Margin (1)	Excess of Reported Cost Over Revised Cost	Average Monthly Production, Tons	Sales Realization	Reported F.o.b. Mine Cost	Margin (1)	Increase of First Quarter 1920 Reported Cost Over 1918 Reported Cost	Increase (+) or Decrease (—) in Production Compared with Monthly Average in 1918		Production, Tons	Sales Realization	Reported F.o.b. Mine Cost	Margin (1)	Increase of April, 1920, Reported Cost Over 1918 Reported Cost	Increase (+) or Decrease (—) in Production Compared with Monthly Average in 1918	
Central Competitive "Interstate"	177	3,269,634	$2.41	$1.88	$0.53	$0.03	2,942,147	$2.47	$2.13	$0.34	$0.22	12%	—10%	2,153,347	$3.02	$2.53	$0.49	$0.62	32%	—34%
Eastern Adjacent	172	2,309,222	2.68	1.93	.75	.11	2,119,563	2.81	2.32	.49	.28	14	— 8	1,912,853	3.48	2.63	.85	.59	29	—17
Western Adjacent	39	584,486	2.53	2.01	.52	.03	548,095	2.68	2.31	.37	.27	13	— 6	486,837	2.91	2.65	.26	.61	30	—17
Southern Appalachian	69	898,259	2.71	2.19	.52	.05	843,517	3.01	2.67	.34	.43	19	— 6	798,692	3.54	2.94	.60	.70	31	—11
Southwestern "Interstate"	76	540,116	3.03	2.63	.40	.07	507,776	3.41	3.11	.30	.41	15	— 6	381,406	3.63	3.44	.19	.74	27	—29
Rocky Mountain	57	1,843,070	2.60	2.12	.48	.04	1,844,342	2.97	2.47	.50	.31	14	+00	1,501,421	3.37	2.81	.56	.65	30	—19
United States	590	9,444,787	$2.58	$2.02	$0.56	$0.05	8,805,440	$2.78	$2.36	$0.42	$0.29	14%	— 7	7,234,556	$3.30	$2.71	$0.59	$0.64	31	—23

(1) "Margin" is not the same as profit.

TABLE III. SALES REALIZATION AND REPORTED F. O. B. MINE COST FOR 767 IDENTICAL OPERATORS, BY GENERAL COMPETITIVE REGIONS

General Competitive Regions	April, 1920						First Quarter, 1920					Increase of Reported Cost in April Over that in First Quarter	Decrease of Output per Working Day in April from that in First Quarter
	No. of Operators	Production (Tons)	Average Days Worked	Sales Realization	Reported F.o.b. Mine Cost	Margin	Production	Average Days Worked	Sales Realization	Reported F.o.b. Mine Cost	Margin (1)		
Central Competitive "Interstate"	239	2,629,701	15	$3.04	$2.54	$0.50	10,619,473	53	$2.36	$2.14	$0.22	$0.40	19%	12%
Eastern Adjacent	221	2,073,142	15	3.51	2.65	.86	6,887,364	49	2.79	2.33	.46	.32	14	2
Western Adjacent	44	503,591	16	2.90	2.65	.25	1,691,862	54	2.68	2.32	.36	.33	14	..
Southern Appalachian	103	1,047,726	17	3.44	3.03	.41	3,261,695	53	3.31	2.72	.59	.31	11	..
Southwestern "Interstate"	94	434,489	15	3.70	3.54	.16	1,744,044	51	3.46	3.15	.31	.39	12	15
Rocky Mountain	66	1,555,447	20	3.35	2.82	.53	5,775,389	67	2.97	2.47	.50	.35	14	10
United States	767	8,244,096	16	$3.30	$2.74	$0.56	29,979,827	53	$2.77	$2.38	$0.39	$0.36	15%	9%

(1) "Margin" is not the same as profit.

certain items, such as income from outside investments.

The 812 operators reporting for April, with a production of about 8,800,000 tons, had an average cost of $2.76, realized $3.26, and had a margin of 50c. per ton. For the year 1918 the records of the Federal Trade Commission show costs for 2,482 operators, with an average monthly output that year of 41,451,000 tons, of $2.04 realization of $2.65 and an average margin of 61c. These figures are summarized in Table I.

Comparison by districts of the April, 1920, figures with those for 1917 shows that each general area maintained the same relative position as regards the size of its margin. The highest margin was obtained in what is designated the Eastern adjacent region—86c. in April, 1920, against 76c. in 1918. It is worthy of note that among the six large regions into which the commission subdivides the statistics this region alone reported a larger average realization in April, 1920, than in the year 1918. In fact, almost without exception each of the subdistricts in this region, which comprises Maryland, West Virginia, Virginia and central Pennsylvania, recorded larger margins in April of this year than in the year 1918.

For instance, in West Virginia seven producers in the Pocahontas field reported an average margin of $1.11 per ton in April, compared with 82c. in 1918; eight operators in the Logan field, $1.62 in April and 92c. in 1918; eighteen operators in the New River field, 94c. in April and 72c. in 1918; and in the Fairmont district twelve operators reported an average margin of $1.12 in April, compared with 68c. reported by seventy-four operators in 1918.

In Central Pennsylvania 133 operators reported an average margin of 83c., 1c. lower than reported by 425 operators in 1918. It is significant that it was in this region that the pinch of the coal shortage this year was first felt and that here bidding for coal has reached the highest pitch. The export market influenced the price at which coal from all the districts in this region was sold in April.

Strictly comparable statistics of costs and sales realizations for 590 operators for April and the first quarter of 1920, and for 1918, are given in Table II. These 590 operators produced an average of 9,445,000 tons of coal per month in 1918, 8,805,000 tons per month the first quarater of 1920 and 7,235,000 tons in April.

As compared with the year 1918, the average sales realization of the 590 identical operators in Table II was 20c. higher in the first quarter of 1920 and 72c. higher in April, 1920. Their average reported cost, however, was 29c. higher in the first quarter and 64c. higher in April. As a result their average margin, which was 56c. per ton (on the basis of reported costs it was 51c. per ton) in 1918, fell (on the basis of reported costs) to 42c. in the first quarter of 1920, but went up to 59c. in April.

The average increased reported f.o.b. mine cost for the first quarter of 1920 was 14 per cent over that for the year 1918, and for April, 1920, was 31 per cent over 1918. This 14-per cent increase of total cost in the first quarter of 1920 is attributable chiefly to the higher wage scale put into effect in November, 1919, as a result of the Fuel Administrator's recommendation of 14-per cent increase in the wage of mining labor. The 31-per cent increase in total costs in April, 1920, is chiefly attributable to two causes: (1) The subsequent wage award of approximately 27 per cent by the U. S. Bituminous Coal Commission effective April 1, 1920 (which included the previous 14-per cent increase), and (2) the decrease of 23 per cent in the production for

TABLE IV. DISTRIBUTION OF F. O. B. MINE-COST INCREASES ACCORDING TO CHANGES IN PRODUCTION OF 590 OPERATORS IN FIRST QUARTER AND APRIL, 1920, FROM AVERAGE MONTHLY PRODUCTION FOR THE YEAR 1918

Change in Production from 1918 Average Monthly Production, per Cent	First Quarter 1920					April, 1920				
	Number of Operators	Production		Increase in Reported F.O.B. Mine Cost Over Year 1918		Number of Operators	Production		Increase in Reported F.O.B. Mine Cost Over Year 1918	
		Tons	Average Change				Tons	Average Change		
Decrease over 25	136	2,823,754	—38%	$0.36	17%	260	2,653,183	—45%	$0.82	41%
Decrease 16-25	76	5,323,755	—20	.39	20	72	961,193	—21	.66	31
Decrease 6-15	85	5,655,152	—10	.29	15	70	949,394	—11	.48	23
Decrease 0-5 / Increase 0-5	83	4,028,792	— 2	.29	13	61	919,046	— 1	.47	22
Increase 6-15	60	3,450,918	+12	.19	9	27	637,396	+10	.49	22
Increase 16-25	41	1,587,657	+20	.25	11	32	573,864	+16	.42	20
Increase over 25	109	3,546,294	+51	.04	2	68	540,480	.26	.26	10
Totals	590	26,416,322	— 7	$0.29	14	590	7,234,556	—23%	$0.64	31%

April, 1920, as compared with the average monthly production of 1918. Cost of supplies and general expense increased considerably over the corresponding items for 1918, but these increases formed only a minor part of to total increase in cost.

The relative change in the situation between April, 1920, and the first quarter of 1920 is shown in Table III where figures for 767 indentical operators are given. This table also shows the decrease in output per working day in April as compared with the first quarter. The average production per day worked, for the 767 operators, was 565,658 tons in the first quarter and 515,258 tons in April, a decrease for April of 9 per cent from the average production per working day of the first three months of the year.

The increase of 36c. per ton in the average reported f.o.b. mine cost of the 767 operators, together with the increase of 53c. per ton in their average sales realization, resulted in a 17c. increase in their margin for April 1920, as compared with the period January-March, 1920, inclusive.

The average number of days worked in April was only 16; in January-March the average working time was not quite 18 days per month. The average decrease in output per working day in April as compared with the first three months was 9 per cent. The increase of 36c. per ton, or 15 per cent in total reported cost, in April was chiefly due to (1) the additional wage increase effective April 1, and (2) the decrease in production from an average of 9,993,276 tons per month in the first quarter to 8,244,096 tons in April, a decline of 17½ per cent.

In order to throw a light on the effect which a change in the production tonnage has in bringing about a change in costs, the tabulation for the 590 identical operators shown in Table II has been made and is given in Table IV. Taking their average monthly production during 1918 as a base, they have been grouped according to the relative decrease or increase in their production for the first quarter of 1920 and for April, 1920. and their total f.o.b. mine cost increases or decreases are thus shown in relation to change in production. A 14 per cent increase over the wage scale in effect throughout 1918 was made in November, 1919, and was in general effect during the first quarter shown in Table IV. The 27-per cent increase awarded by the U. S. Bituminous Coal Commission (which included the 14 per cent increase) went into effect April 1, 1920.

In the first quarter, 1920, Table IV shows that costs increased roughly proportional to the extent of changes in tonnage. The same holds true for April. In the first quarter of 1920 the increased cost attributable to the 14-per cent wage advance of November, 1919, is most nearly measured by the figures for the group of operators whose production tonnage changed least, namely 5 per cent or less (the group of "Decrease 0-5" and "Increase 0-5"). This group had an average decline of only 2 per cent in production and had an increase in total f.o.b. mine cost (labor, supplies, and general expense) of 29c. per ton, or 13 per cent on such total cost in 1918. In April the increase for the corresponding group of 61 operators is the nearest available measure of the 27-per cent wage increase. This group had an increase in total f.o.b. mine cost (labor, supplies and general expense) of 47c. per ton, or 22 per cent more than its total cost in 1918. In both cases increase in labor cost is by far the most important item, though increases in cost of supplies and in general expense also had some effect. The two groups referred to in this paragraph are believed to be representative of the industry though not co-extensive with number of producers or the total production.

Japanese Study Vegetal Source of Coal

CHOZO IWASAKI has made what he terms "A Fundamental Study of Japanese Coal," similar to that made by Dr. Reinhardt Theissen of United States coals. In Vol. 1 No. 2 of the "Technology Reports of the Tôhuku Imperial University"* an article on the above subject appears with eight full page plates and about thirty-five pages of text.

Iwasaki made several thin sections of lignites, bituminous coals, semi-anthracites and anthracites, using the X-ray on the two latter types, as the hard coal is opaque to light in slides of such minimum thickness as Iwasaki was able to develop. He describes his work in preparation of the specimens as follows: "Pieces of coal are first ground on a steel plate with fine garnet sand. When the pieces become nearly 2 m.m. thick they are hardened by melted Canada balsam and then fixed to a glass slide until they are as thin as possible.

"They are next carefully polished with the wet leaves of the scouring rush (Equisetum hyemale, L) and finally with those of the Aphanante aspera (Thumb) Planch, by the usual method of the Japanese gem-grinder. During this treatment the grinder now and then places them on a window pane and looks through them to see if they are strong enough for further polishing. In this way the thin sections of coal are prepared.

"Such thin sections are translucent when a strong solar ray or an electric light is used, except in the case of anthracite and semi-anthracite. If, however, we use the sunlight directly, the sections are sometimes damaged by the heat that accompanies the light. But the use of the tungsten lamp obviates that difficulty. When these preparations have been made, many kinds of Japanese coal transmit the red or yellow ray through their thin sections, and the internal structure may be seen quite distinctly by the observer."

Speaking of resin in coal bodies he says: "Resin is most visible when it exists in lignite as fairly large grains, and as coalification advances these grains gradually become fewer in number and of smaller size. It is supposed that the quantity of the resin grains was larger at the beginning of the advanced stage of the coal but that they were melted and disseminated throughout the fundamental matter during the development of coalification."

*7½ x 10½, paper boards; Maruzen Co., Ltd., Tokio and Sendai, Japan.

Shipping Board Blames Priority Orders for Slump in Charter Market

THE U. S. Shipping Board is not particularly pleased with the New England and Northwest orders of the Interstate Commerce Commission. These orders are being blamed for the drop in the charter market. The service orders, it is pointed out, served notice on the world that exports of American coal were to be curtailed rather than expanded. Thus a great deal of tonnage either in the coal trade or contemplating entering it, suddenly became available for other purposes. The sudden large increase in available bottoms naturally had an influence on the charter markets.

Discussion by Readers

Edited by
James T. Beard

Three-Way Latch Switch in a Mine

WITHOUT denying the fact that it is quite unusual to find a three-way latch switch in a mine, still I can hardly agree with the remark that such a switch is "impracticable," as stated in the reply to the inquiry of a Kentucky mine superintendent, *Coal Age*, June 24, p. 1319. Kindly permit me, therefore, to submit a sketch of a three-way, latch switch that has been in use for a number of years at our mine and which I consider both useful and practicable.

The switch to which I refer is laid at a kickback dump on our tipple. We are operating here two mines

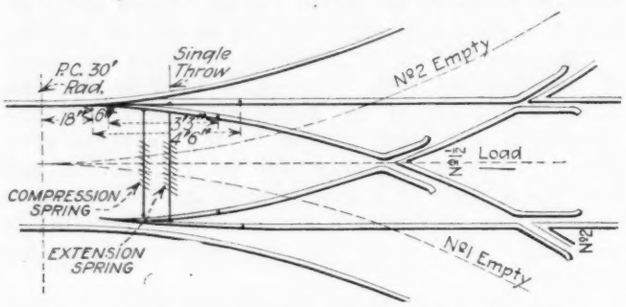


FIG. 1. A SINGLE-THROW, THREE-LATCH SWITCH

and the loaded cars from the two openings reach the dump over a single track and, after passing through the latches, return from the kickback to their respective empty tracks, on either side of the main loaded track, where the trips are made up to be hauled into their respective mines.

As will appear from a study of Fig. 1, this is a combination switch in which the four latches are connected

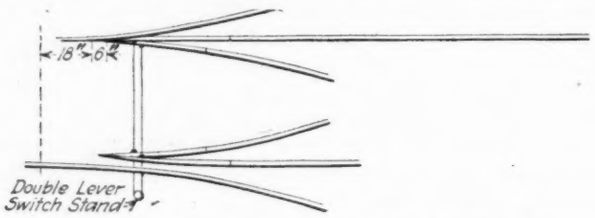


FIG. 2. THE SAME SWITCH WITHOUT THE SPRINGS

in pairs, the two inner latches being held apart by a strong compression spring, which holds them tightly against the two outer latches. The latter are connected together by a strong extension spring, which prevents more than one of these latches from being in contact with the follower rails of the switch at any one time.

It will be observed that these combined latches can be thrown to one side or to the other by the single-throw switchstand, which operates a bar attached to the two outer latches. The entire system moves to and fro as a unit and, the latches being connected by the two springs mentioned, the cars from the dump pass through them readily without disturbing the position of the switch, which is set for the desired return empty track. This arrangement has given good satisfaction from the time it was first installed on the tipple.

Fig. 2 shows how the four latches can be coupled up so as to be operated by a form of double lever. In this case, no springs are used, but each outer latch is connected by a solid bar with the opposite inner latch. The two levers should be placed just far enough apart, say 3 in., to permit both levers to be thrown simultaneously with one hand, or a single lever moved without chafing the hand. I gladly submit this arrangement to the readers of *Coal Age*, believing that it will be helpful to many who are operating under conditions requiring a three-throw switch either in the mine or on the tipple.

Pikeville, Ky. W. T. GRIFFITH.

Contract Mining, the Company, the Miner and the Union

REGARDING the contract system of mining coal, the letter of "S. W. F.," *Coal Age*, July 22, p. 176, recalls my own experiences in this line, while I was in charge of some Alabama operations several years ago.

We had a number of slope openings in an extremely faulted field, the faults running approximately with the dip of the coal so that the headings driven off a slope, as a general rule, would run into a fault too large to drive through, say at a thousand feet or more from the slope. In such a case our method was to rob back from the fault, after the rooms were driven. This required fast work in a necessarily restricted area and limited the number of men engaged on a heading to about four.

CONTRACT LABOR REDUCES COST

It was at a time when coal costs had to be figured pretty close so that, in addition to the necessity from a mining standpoint of pushing this work speedily, it was also imperative that enough coal be mined each day to keep a driver and mule busy. If one or two miners working on a heading laid off a day it is easy to understand how it affected the cost of the coal coming from that heading, to say nothing of the increased hazard of losing coal adjacent to the gob.

As a remedy for this state of affairs I started the contract system. My plan was to draw up a written contract with three or four good miners, obligating them to deliver the coal to the slope siding, at a certain price per ton. They had to hire their own driver, be responsible for loss of rails, cars, or other equipment, clean up any falls on the heading, and be responsible for the proper recovery of the coal and the safety both of themselves and their men. The contract price was arranged by adding to the mining and loading price, per ton, the expense of the driver and other day labor, per ton, based on the average performance with a full crew, on non-contract work.

A miner was subject to the forfeiture of his interest in the contract if he laid off without sufficient cause, and he was also restrained from laying off by his sense of duty to his fellow contractors. We found this plan worked very satisfactorily and extended it whereever possible. The type of men we had seemed to enjoy the distinction of being contractors and acting as their own bosses, and as time went on contracts were in demand. We got more coal at a less cost, and the miners made more money so that both sides were benefitted.

We then went further and contracted small acreages of coal to a group of three or four contractors, the company furnishing the equipment, and the contractors installing it, erecting the tipple, etc., under the general supervision of the company's superintendent. The company handled the payroll, the time being turned in by the contractors; and the contractors were paid, each month, so much per ton for all coal loaded on cars at the mine, after deducting any charges for labor and supplies paid by the company.

Practical Working of the Contract System

In a contract of this kind one of the contractors preferably held a mine foremen's certificate. In the early development stages, the contractors would of course go into debt to the company; but, as the contractors labored themselves in opening the mine, the company was protected against loss by the amount of their labor, in addition to the labor of their men, the results of this combined labor reverting to the company in case the contract was forfeited.

This letter could be much extended by going into details and giving specimen contracts; but I hesitate, not being sure that it would be of any value. Mines, the country over, are now nearly all unionized. What has the union to say as to one of its members doing something a little out of the ordinary, becoming a little boss of his own, working a little harder and earning more money? Does it sanction or permit such work? In every section we have many fine red-blooded Americans among our miners, men who are capable of handling contract work; and it would seem a shame to restrict them in their opportunities. Perhaps some of these who hold union cards will read this and, if so, I hope they will write to *Coal Age*, giving their views on the subject.

M. L. O'Neale.

Morgantown, W. Va.

What Do Our Mine Workers Want?

MANY of us who have been longer in the mining game can hardly fail to see the lost motion, lack of pep, mingled with a disposition to find fault and similar evidences of unrest that should impress everyone with the need of sticking close to the job to which he has been long accustomed.

Turning over in his mind the situation that has developed and that now prevails quite generally in the coal-mining industry, one cannot but ask, What is the matter with our mine workers? The mystery grows with the thought that the present wage scale was never even dreamed of in former times. The theory of the trade unionist that high wages increase efficiency and create contentment among workers is shot to pieces. The sequel shows that the only just compensation is one *based on what a man does to earn his pay.*

By way of inquiring into the cause of the present unrest of labor, let us consider, for a moment, the case of a driver or other company man working in the mine. He starts at the usual hour for work. Proceeding with leisure, he rolls a cigarette, when the regulations of the mine do not prevent his so doing, and appears in no immediate hurry to take up his duties and enter on the activities of the day. Perhaps, at intervals of thirty minutes or between trips, he goes through the same performance, in spite of the fact that the men inside are waiting for cars, and his delay means both dollars-and-cents to them and loss to his employer. Such a condition is worthy of serious consideration on the part of every honest worker who is desirous of doing his share to improve the present situation in mining.

Daymen Refuse to Perform Other Than Their Accustomed Duties

During a car shortage, a month or so ago, the superintendent of a certain coal mine in this state gave his foreman orders to keep the daymen on a full shift provided they could be put to work at anything that had to be done. It happened a day or so later that they had a five-hour car supply at the mine. To complete the shift for the daymen, a driver was asked to handle rock required for track ballast. Muttering that the company was short of men, he refused to comply with the request and went home. Others followed his example with the result that the next morning the men went on strike, after learning that they were not credited with a full shift for the previous day.

As another instance of the change that has taken place in working conditions, in respect to mine labor, let me cite a mine in Alabama that, prior to the war, had an output of 500 tons per day, which one man had always handled without difficulty. Today, the output of that mine is reduced to 200 tons per day, yet, two men are now required to handle the cars on the track. Is it any wonder that the public, who have to pay more for their coal than they did before the war, protest loudly against the present attitude of labor.

Agitators Take Advantage of the Scarcity of Labor to Stir Up Trouble

In answer to the question as to the cause for these conditions, it can be stated that there are several causes tending to produce this attitude of labor. In the first place, irresponsible agitators have led the men to believe that they are rolling up enormous profits for their employers. Again, the scarcity of labor during the war period led to a laxity of discipline in the mine, because of the desire of mine officials to hold their men. This put a premium on inefficiency in every department of mine work. For example, I asked the driver referred to previously how he could expect a full shift for five hours' work. His reply was that he would want a full shift if he made but a single trip in the mine.

It goes without saying that the average mine laborer, both miner and daymen, has lost his sense of justice. This is not true of all mine workers; but we need an awakening of the good old American honesty that prevailed in the mines in the earlier days when men were anxious to give *a day's work for a day's pay.* No one would refuse the miner good pay for his work; but he should show his appreciation of the present conditions and make good by trying to help in every way possible.

Altoona, Ala. N. D.

Natural Advantages the Chief Factor in American Coal Mining

WITH the kind permission of *Coal Age*, I desire to offer a few comments on the criticism offered by George S. Rice, in his article entitled "Why do American Mine Workers Produce More Coal than British?" *Coal Age*, April 15, p. 762. The article enlarges on and criticizes one that recently appeared in a British journal and which explained several points of advantage in American mining over the conditions that prevailed in the mining of coal in Great Britain. In reading the article of Mr. Rice, it occurred to me that there were good reasons why one might differ with him in respect to the conclusion he has reached regarding the real causes of a larger production of coal, per man, in America, than in Great Britain. Allow me to mention a few of these reasons:

Exception is first taken by Mr. Rice to the claim in the British article that American mining, being yet in its early stages of development, presents less difficulties than are met in British coal mines. The statement of Mr. Rice that "Where these advantages exist they will persist regardless of the time during which mining continues," leads the "man from Missouri" to inquire as to the significance of this remark. Allowing that natural advantages *do* exist in American mining, and claiming that they will continue to *persist* is an argument that sustains the claim of the British writer; and it is hard for a practical miner to discover the superiority of reasoning displayed in this statement of our friend.

None will deny the truth of the old adage: "A New Broom Sweeps Clean." It is logical that this particular advantage obtained in the use of the "new broom" is only temporary and fails to persist as time goes on. The "man from Missouri" concludes that this must have been what Mr. Rice had in mind, for where can one look for a coal mine that has reached a stage of development that is permanent. It cannot be denied that there are some advantageous features in mining that continue; but those that are really essential to increased production and a low cost of operation must dwindle as the development of the mine proceeds, dragging down with them the minor advantages that persist throughout the life of the mine.

Great Britain vs. United States

It is clear that the illustration is alike applicable to the mines of both Great Britain and the United States. The former have reached a stage of development that lowers the production of the mine and increases the cost of operation, while coal mining in the United States is yet in its infancy and does not possess the same difficulties.

Again, the drift of the argument presented by Mr. Rice would make it appear that the chief factor in production and economy of mining, in America, has been the introduction of mechanical equipment in those mines. Now, when one considers the natural conditions prevailing in the coal fields of Great Britain—the generally thin flat seams, lying at an average depth far greater than is common in the United States—and reflects that the thinness of the coal means a greater distance of underground haul, for the same tonnage produced, and the greater depth of hoist likewise limits to that extent the daily production of the mine, he must conclude that these natural conditions are the chief controlling factors both in the cost and production of coal.

In respect to the mechanical equipment of the mine, the same natural conditions favor the cheaper mining of coal in American mines. Moreover, it would seem that coal operators, in America, are willing to incur a greater risk, in the operation of their mines, than is permitted by the Coal Mines Regulation Act in Great Britain. The Act prohibits the use of electrical haulage in the mines of England. In the view of the English mining engineer, the advantage to be gained by the use of that form of power is not worthy of consideration, in comparison with the danger incurred of the possible ignition of gas in the mine.

Mining Machines Debarred, Pick Mining General

Now, a word in regard to the method of mining the coal. As is well known, natural conditions make the longwall method the prevailing system of mining in Great Britain; and, as Mr. Rice states, the room-and-pillar system of working common in American mines is "better adapted to the use of under-cutting machines than is longwall, particularly when the coal is at all irregular in dip and in faulty condition, as is apt to be the case in Great Britain." True it is that the natural conditions prevailing in English mines debar the general use of mining machines and pick mining is general. However, pick mining, in England, is very different from the so-called "pick mining" in America where, as Mr. Rice states, "explosives and not picks are made to do the work of mining." The English law requires that the coal must be undercut a distance of from 4 to 5 ft., and no blasting off the solid, which is so common in the United States, is permitted.

Incidentally, reference is made by Mr. Rice to the "intermediate system" of haulage in British mines. Perhaps he refers to the use of gravity planes that, owing to a dislocation in the coal beds, appear most suitable for transporting the coal. In such instances, their use has been found to be equally economical, or even superior to the adoption of any other form of underground haulage.

In closing, let me say that there is no reason why the opinion expressed by the British writer, that a difference of output of coal, per man, in America and Great Britian, is due chiefly to the causes he has mentioned, is incorrect. I quite agree with him that this difference is traceable to certain advantageous conditions that exist in the American coal areas, as compared with those that prevail in Great Britain. It does not appear to me that the difference is attributable to the more extensive introduction of mechanical equipment in American mines.

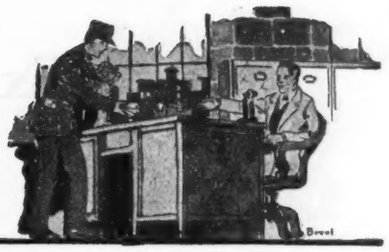
Again, the "man from Missouri" must be shown before he will believe that the science of mining in England stands second to that in America. Neither is it at all reasonable to assume that the difference lies in the skill of the individual miner. On the other hand, it must be admitted that American mining is in the early stages of development. Also, the generally greater thickness of the coal seams and their lying at a less depth below the surface, which may average perhaps one-sixth of the depth of British coal, are the controlling factors in the larger production at a minimum cost, in America, as compared with the same items in England.

Prince Rupert, B. C., Canada. T. J. SHENTON.

Inquiries of General Interest

Answered by

James T. Beard



Power Consumption Is Increased When the Air Is Short-Circuited

THE ventilating fan in our mine is connected by a link-belt drive with a 150-hp. motor, operated with alternating current at a pressure of 220 volts, on a 60-cycle circuit. The fan is a 15 x 4-ft. Jeffrey and, running at a speed of 110 r.p.m. produces an air current of 250,000 cu.ft. per min., under a 3.5-in. water gage, in the fan drift.

The mine is opened by a shaft and worked on the longwall system of mining. Not long ago a slight fall occurred in the intake and broke down a brattice separating it from the return air-course. As a result, the air was short-circuited at that point, the entire current produced by the fan passing at once to the upcast shaft and out of the mine.

The fall was only what might be expected to occur at any time and would have caused no further thought or comment than what concerned the clearing up of the entry and repairing the brattice, except for the observed reading of the meter. The short-circuiting of the air, caused by the breaking down of the brattice, cut out resistance of the mine, which it would seem should have reduced the work required by the operation of the fan. Instead, however, the reading of the meter went up, showing an increase in the power consumed in driving the fan.

The question I want to ask is: Should it take more kilowatts of electrical energy to drive the fan when the air is short-circuited so as to cut out the mine resistance and lower the water gage?

Another question is: Assuming the same frictional resistance in the mine, why is it that the consumption of power varies with the change of season from winter to summer and from summer to winter? Is this difference due to the varying density of the air at different seasons of the year The difference observed amounts to several hundred kilowatt-hours a month, between summer and winter. Allow me to add that I am not alone in the belief that the full circuit of the air in the mine should call for a greater consumption of power than when the current is short-circuited.

Peru, Ill. CLIFFORD R. CLARK.

When the air current in a mine is short-circuited, as described by this correspondent, it is true that the mine resistance is cut out, which reduces the work to be performed in the mine. This, however, is only a portion of the work performed by the ventilator. A considerable portion of the power applied to the fan shaft is always absorbed in passing the air through the fan itself. When the latter is operating on the full circuit of the air, from 20 to 40 per cent of the total power is lost in the fan.

But, cutting out the mine resistance reduces the pressure in the fan drift against which the fan operates; and, as a result, a larger volume of air rushes through the fan. Then, since the power increases with the cube of the quantity of air circulated, it is easy to understand that the power lost in the fan is greatly increased. This loss is generally much greater than the power previously required to circulate the air through the mine. As a result of this increased loss of power in the fan, the latter must either run slower or consume more power in its operation, the latter being the case when the fan is electrically driven.

In answer to the second question, it can be stated that the most probable reason for the difference in the consumption of power in summer and winter is that it is due to a natural air column existing somewhere in the mine or the mine shaft or slope. According to the relative temperatures of the inside and outside air, this air column may either assist or retard the circulation in the mine. In the one case there may result a less consumption of power required to drive the fan; and, in the other case, the consumption of power may be increased.

Crushing Strength of Concrete

INTEREST in the construction of mine dams was revived by the inquiry regarding the strength of such a dam built of wooden blocks, which appeared in *Coal Age*, July 1, p. 26, and was followed by an excellent reply showing that the strength of the dam in question was not adequate to support the given head.

Since most of the work in this line has been of concrete construction, I want to ask what is the ultimate crushing strength of good concrete and what factor of safety should be allowed in the construction of a mine dam, assuming the walls of the passage are solid and capable of resisting the thrust of the arch under a given head. ENGINEER.

St. Louis, Mo.

The strength of concrete depends on the quality of the materials used, the manner and proportion in which they are mixed and the time allowed for the concrete to set before receiving its load. A good hydraulic cement must be used with clean, sharp sand and hard rock broken to a uniform size. The best results are obtained when these ingredients are thoroughly mixed in the proportion of one volume of sand three volumes of cement, and five or six volumes of broken stone. Sufficient water must be added to form a good, workable matrix. This is termed a 1:3:5 or 6 concrete. Ordinarily, not less than thirty days should be allowed for concrete to set, and a still longer time is desirable in mine work. The ultimate strength of a 1:3:6 concrete, making no allowance for reinforcement, may be taken as 1,800 lb. per sq.in. It is safe practice in the construction of dams and retaining walls of concrete to estimate on a safe crushing strength of 500 or 600 lb. per sq.in., making the factor of safety about three, which will generally give good results.

Examination Questions

Answered by

James T. Beard

Miscellaneous Questions

(Answered by Request)

Ques.—What weight of electric motor will be required to haul four cars, each having a gross weight of three tons, up a grade, assuming a coefficient of friction 0.025 and a coefficient of traction of 0.16, the tangent of grade angle being 0.03492?

Ans.—The weight of the trip hauled is $4 \times 3 = 12$ tons. Then, calling the required weight of the motor x, in tons, the coefficient of traction being 0.16, the tractive effort of the locomotive is $0.16x$. When the locomotive is hauling the trip on the upgrade its tractive effort must overcome the resistance of both the track and the grade. But, since the total moving load including the locomotive and the trip is $x + 12$ and the coefficient to the tangent of the grade angle, making the total coefficient of resistance 0.05992, say 0.06. The total resistance of the track and the grade is therefore $0.06(x + 12) = 0.06x + 0.72$.

Now, since the tractive effort of the locomotive must be equal to the total resistance which it overcomes in moving the load we have

$$0.06x = 0.06x + 0.72$$
$$(0.16 - 0.06)x = 0.72; \text{ or } 0.1x = 0.72$$
$$x = 0.72 \div 0.1 = 7.2 \textit{ tons.}$$

Ques.—How do you conduct an examination of a gaseous mine in order to learn its true condition?

Ans.—Having properly prepared a good testing lamp, enter the mine with the intake air, or start at the intake end of the section to be examined, and follow the course of the air-current, examining each place thoroughly and in order. Make a careful test for gas at the face and observe the condition of the roof and coal before making the mark to show the date of the examination, in each place visited. Where brattice is down and can be replaced quickly, this should be done. If gas is found or other danger is observed in a place, a danger signal must be placed at each entrance thereto as a warning to all persons not to enter. Proceed in this manner until every place in the mine or section to be examined has been visited. Returning to the shaft, slope bottom, or entrance to the mine, make a full report in the book kept for that purpose, dating and signing the same. This report must note the character and location of such dangers as have been found, and the fireboss should then remove the checks of men whose places have been found unsafe for work and deliver the mto the mine foreman. On leaving the mine, he must remove the danger signal, which he placed at the entrance before starting.

Ques.—In what part of the mine may gas be expected to be given off more freely than in other parts?

Ans.—The answer to this question will depend wholly on the conditions existing in the formation, respecting the inclination of the strata, the presence of fault lines, the development of the mine and the method of working the coal. In general, it can be said that gas may be expected to be given off more freely in those sections of the mine where the extraction of the coal is more rapid and a larger surface of fresh coal is exposed; or where the presence of faults renders the escape of gas from the strata easier, so that larger quantities are generated. At times, the character of the roof strata, in connection with the method of working employed, is such that much gas is given off by reason of roof falls or the undue settlement of the roof on the pillars. Aside from its generation, larger accumulations of gas, may generally be expected at the face of steep pitches and in rise workings.

Ques.—Name six good features of a safety lamp for general work.

Ans.—For general work, a lamp must (1) give a good light that is well distributed on the roof and floor. (2) The lamp must be simple in construction, easily examined and assembled, having as few parts as practicable, none of which can be omitted without detection. (3) The lamp must be light and portable, so that it can be carried about without being a burden. (4) The lamp must be strong and durable so that it will withstand rough usage without being injured. (5) The lamp must not be too sensitive to gas so as to cause it to flame readily. (6) A working lamp should be supplied with some reliable form of igniter, so that it can be relighted when accidentally extinguished.

Ques.—Which is the easier to remove from a mine, firedamp or blackdamp? Explain why.

Ans.—The ease with which either of these gaseous mixtures can be removed from places where they have accumulated will depend on the character of the mine. In a flat seam ventilated by a good current of air, there should be little difference in the ease with which either of these mixtures can be removed from its lodgment if proper means are adopted for that purpose. However, blackdamp being the heavier of the two mixtures will generally require a stronger air current to sweep it along the air passages, even in a level seam; because the air is prone to pass over the blackdamp, which lies on the floor of the passageway.

Moreover, the rapidity with which blackdamp diffuses into the air current is much less than in the case of firedamp, the rate of diffusion of these mixtures being inversely as the square roots of their densities. For this reason also, the blackdamp would be more difficult to remove than firedamp, even in a level seam.

In an inclined seam, firedamp will generally be accumulated in larger quantities in the rise workings and the faces of steep pitches, while blackdamp will accumulate in dip workings or at the face of a dip and in swamps or other low places. In either of these cases the accumulated mixture is more difficult to remove than where the seam is level or its inclination less steep. Other things being equal, however, blackdamp will generally be more difficult to remove from a mine, owing to its lower rate of diffusion and because its density is greater than that of the air current.

The Labor Situation

Edited by
R. Dawson Hall

No Change Along Morgantown & Kingwood

THERE has been little or no change in the strike situation along the line of the Morgantown & Kingwood Ry. in Monongalia and Preston counties, although some of the companies have ceased operations for the time being. In so far as the mines of the Penn-Mary Coal Co. are concerned the situation remains practically unchanged. Mines of the company will close down rather than enter into a closed-shop contract with the United Mine Workers.

Both Operator and Men Go Holiday Making

FOR over a week the Cassidy Collieries of the Granby Consolidated Mining & Smelting Co. have been closed down. Just what the trouble is cannot be said, but whatever the cause it arises from certain demands of the men, whether for increased wages or for recognition of an organization is not clear. It is denied, however, that more wages are being sought and living conditions cannot be the source of the trouble, for the Cassidy Collieries are a model in this respect. The only possible difference, therefore, would appear to be in regard to some organization among the men.

Operation of the mine stopped when the men called a holiday to formulate their demands. The management thereupon met the miners by making the desire for a holiday appear unanimous by formally closing down the property. The officials explained that the bunkers were full and that difficulty was being experienced in marketing the product.

Among those familiar with the situation this is not taken seriously, for all the other coal mines of Vancouver Island are working as near to capacity as labor conditions permit and orders for coal are far in excess of output. The Deputy Minister of Labor is investigating the trouble.

Quiet Along Tug River; Output Increasing

WITH Kentucky guardsmen stationed in Kentucky territory on one side of Tug River and with the state police of West Virginia patroling the West Virginia side of the same stream, not only were there no disturbances in the strike zone in Mingo County, W. Va. during the last week of July, such as had occurred in previous weeks but there was an increase in production during the period named, for more miners were at work. The greater protection furnished them made them, it is believed, more ready to follow their natural inclination to return to work. It is said that more coal was loaded than at any time during the strike, and that fact seems to indicate that the United Mine Workers are fighting a losing battle.

During the early part of the week already mentioned mines at Borderland, Sycamore and Wilhelmina were in operation with a fairly large quota of men at work. None of them was fired upon or molested in any way. The Freeburn (Ky.) plant of the Solvay Colliery Co., opposite Delorme, W. Va., where there had been much shooting during the previous week, also returned to normal production.

Although threats had been made that any attempt to operate certain plants would bring about a recurrence of sniping such as had been witnessed at Borderland and other points, no trouble occurred, undoubtedly because detachments of state police had been sent to operations against which threats had been made. The Sycamore and Wilhelmina mines had been idle for some time and the fact that they had been able to resume operations led many to believe that it was a forerunner of a resumption of operations on the part of other plants.

Arbitration Board Backs Texas Miner's Right to Job

THREE of the five local disputes between Texas coal miners and operators, which had been referred to an arbitration committee composed of three miners and three operators, were passed upon at a meeting of this committee in Fort Worth recently. Two of the controversies involved reinstatement of a miner who had been discharged and who had demanded reinstatement without loss of time or priority rights. One miner was reinstated and the other discharged by the joint committee.

The third dispute, however, which involved the Bridgeport Coal Co.'s demand for a penalty of $1 a day against all miners who were out April 2, 4 and 5, was considered and referred to the Texas Mining Board for adjustment.

Operator Must Not Exceed Union Scale In Kentucky-Tennessee District

NOTICE has been served upon operators in the Kentucky-Tennessee district that wages above the union contract rates must not be paid or the union will call a strike in such mines and will not allow the mine workers to return to work till the mine is unionized. The mines are working on an open-shop basis, all of them employing union men.

Apparently the real operators have brought pressure to bear on the union. The regular coal-mining companies have contracts to meet based on the conditions which ruled before the coal shortage, some contracts being a year old. They do not receive the outrageous prices that the fly-by-night operators are getting, not only for a part, but for all the coal they produce. They sell nothing but spot coal and for prices around $10 a ton. They can pay almost any wages and can draw away the men from the regular mines, depriving them also of railroad cars, for the gondolas are divided with every new claimant for railroad consideration.

Anthracite Operators Compare Living Cost With the Wages of Their Workmen

ONE of the most striking exhibits of the anthracite mine workers in testifying before the Anthracite Coal Commission was a chart showing the way in which, as they alleged, increases in wage rates tarried behind cost of living. They suggested that the area between the two graphs, that of cost of living and that of wages, represented a tragic loss to the mine workers that should not only be made up but compensated for when

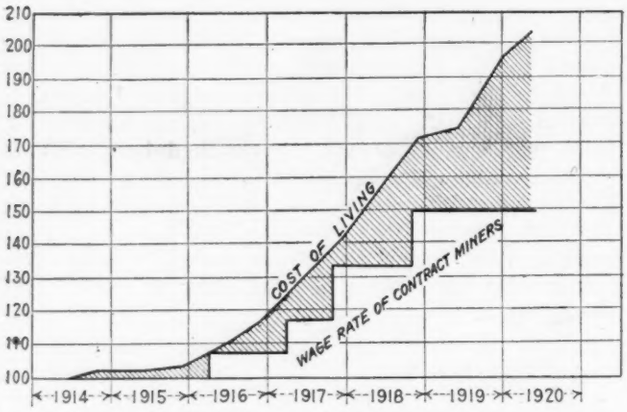


FIG. 1. CONTRASTING LIVING-COST INCREASES WITH THE RISES IN ANTHRACITE CONTRACT RATES

Both increases are given as percentages of the prices and rates respectively which obtained in 1914. The mine workers argue that the delay in conforming wage rates of contract miners to the cost of living and the inadequate degree to which the conformation was in each case made caused the contract miners the loss indicated by the shaded area.

a contract was signed. This exhibit *Coal Age* reprints here as Fig. 1.

When the operators presented their charts covering the same ground, Figs. 2 and 3, they told an entirely different story. By steady work, overtime and greater opportunity during working hours the mine worker had found his earning power increased out of all proportion to cost of living. Especially has the day worker been benefited, as he has had both steadier work and overtime He often works when the mine is idle.

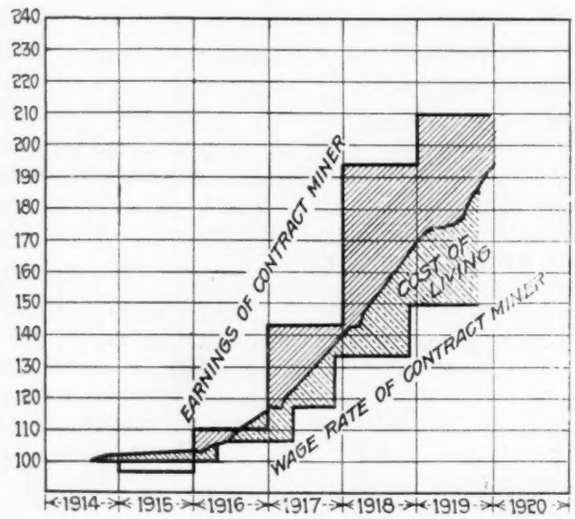


FIG. 2. OPERATORS' CHART FOR EARNINGS OF CONTRACT MINERS IN ANTHRACITE REGION

Contract miners by steadier work and a better turn of cars have made better wages since the war than they did before, even when the high cost of living is considered.

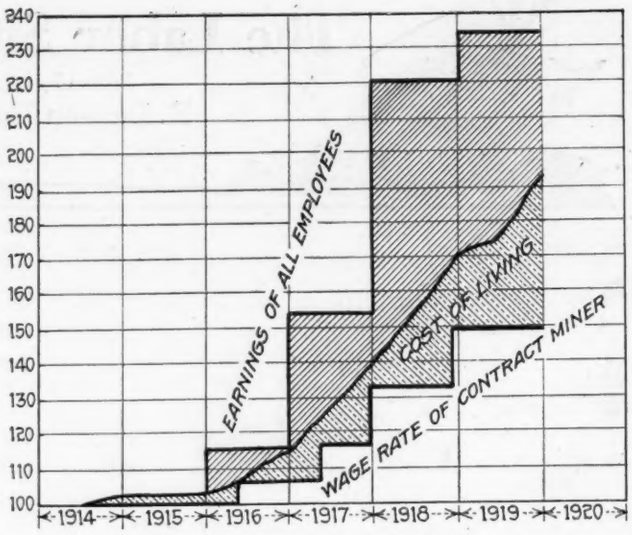


FIG. 3. ALL ANTHRACITE EMPLOYEES ARE BETTER OFF TODAY THAN BEFORE THE WAR

Regular operation, shorter regular working hours with paid overtime have so increased their earnings that the cost of living has not managed to compel them in any way to limit their expenditures. They can buy more now than in 1914.

Increases of Wages Are Granted Miners in Rocky Mountain Field of Western Canada

DETAILS of the new contract between the mine workers and operators of district 18, United Mine Workers of America (Eastern British Columbia and Southern Alberta), have been completed. A 27-per cent increase in contract tonnage rates is granted in the bituminous fields and 20 per cent on deadwork, which includes timbering and the handling of refuse. In the lignite fields a 24-per cent advance per ton is allowed and a 20-per cent increase on deadwork. All day wages are increased 27 per cent.

These new rates are retroactive to Arpil 1 and will remain in operation until March 31, 1922. The agreement is between the Western Canada Coal Operators' Association and the United Mine Workers of America. The miners also are to receive $1.17 a day cost-of-living bonus. These changes mean that a contract miner will be able to earn from $7 to $10 a day, while the wages of the adult day workers will run from $5.58 to $7 a day. The 8-hour day will be observed on the surface and eight hours from bank to bank in the mines.

A mass meeting was held recently at Fernie when the contract was considered and the question of allegiance to the U. M. W. of A. and the One Big Union was debated. In view of the fact that the agreement was negotiated between the operators and the former organization, the U. M. W. of A. appears to have had the better of the argument.

The miners afterward marched *en masse* to the offices of the Crow's Nest Pass Coal Co. and conferred with the management. What transpired has not been announced but the mines up to the time of writing have worked without interruption.

Coal Age Index

THE indexes to *Coal Age* are furnished free to all who ask for them. The index for the first half of 1920 is ready for distribution, and a copy can be had by addressing a postcard to the Subscription Department of *Coal Age*.

NEWS FROM THE CAPITOL

BY PAUL WOOTON

Attorney General Soon to Announce Fair Price for Coal

Trade Commission Data Form Basis for Conclusions—Appointment of Fuel Administrator Unlikely—Morrow Canvasses Situation

SINCE there has been no development during the last ten days which would serve as a sufficient reason for invoking war-time powers as to coal control, the recurrence of the Fuel Administrator rumor is not taken seriously in most quarters. It is expected at this writing that the Attorney General will announce in the next few days what he considers to be a fair price for coal. It has been stated at his office that he is studying the returns of operators to the Federal Trade Commission in an effort to arrive at an equitable conclusion.

In discussing the coal situation on his return from New England, J. D. A. Morrow, vice-president of the National Coal Association, among other things, said:

The Baltimore & Ohio R.R., the Chesapeake & Ohio, the Norfolk & Western, the Virginian and other large coal-loading roads are performing creditably. The Pennsylvania R.R. is still a little disappointing. Colonel D. B. Wentz, president of the National Coal Association, has taken this up with General Atterbury, of the Pennsylvania Lines. We are satisfied that the executives of the Pennsylvania Railroad are making vigorous efforts to improve the loading and shipment of coal on their lines.

Movement to the Lakes is not yet up to schedule. From the inception of the Lake order on July 26 up to Aug. 7 the total shipments were 10,745 cars behind the scheduled 4,000 to be dumped at Lake Erie ports daily. Practically all of that shortage is due to insufficient car supply on the Pennsylvania R.R. Shipments over that road to Lake ports for the week ending July 31 were 4,660 cars below scheduled requirements. The Wheeling & Lake Erie also was about a thousand cars behind. The deficiency, however, was due not so much to lack of cars as to congestion on the road. This is now being rapidly remedied and regular shipments up to requirements may be expected.

The situation as to New England is distinctly encouraging. The New England wholesale coal men have organized a committee to work in conjunction with the operators and the railroad executives, and as an outcome of their efforts coal is moving to tidewater ports fully up to the 1,250,000 tons called for under the New England priority schedule.

One of the chief sources of concern was the supply of coal for the New England railways. The fact that these railways were endeavoring to move their fuel supply all-rail made it difficult for other New England consumers to obtain their tonnage through the New England gateways. The New England railroads now have arranged for the movement of 382,000 tons of locomotive fuel by water. This fact alone insures the success of the New England program.

The sore spot remaining in the soft-coal situation is the speculation in coal. This problem is being attacked by the National Coal Association through a special committee, which has developed a preliminary plan (involving curtailment of the reconsigned-car privilege) to deal with the speculative misuse of transportation facilities in the tidewater movement. The committee is tackling the problem in a practical manner. Without question the speculative situation can be met if the railways will join in making effective the committee's plan when it is worked out.

That the President had decided finally to appoint a Fuel Administrator was rumored on Friday. The report came at a time when those opposed to such action just had begun to breathe easily after the strikes in Indiana and Illinois. It was recognized clearly that any continued strike in those states would require such sweeping changes in coal distribution as to be beyond the peace-time powers. The fact that the strike situation became a very menacing one and did not call forth drastic steps, was taken to indicate that the administration was distinctly adverse to invoking the Lever Act. The early report had it that the President had been influenced in reaching his decision by pressure brought by public utilities.

Some changes which probably would be made as a result of a resumption of price regulation with the appointment of a new administrator, as compared with prices in effect at the time the Fuel Administration was discontinued, would be the following: Increase in wages, 60c. per ton plus any addition which may be granted daymen; increased prices in materials and supplies, 25c per ton; increased overhead, 25c per ton; increased cost due to idle time, $1 per ton. In addition, there also would be a selling expense of 8 per cent on the new cost. A number of representative operators agree that approximately these additions would have to be made to the last prices.

Who Will Succeed Ames?

SINCE the resignation of Charles B. Ames, Assistant Attorney General, last week, there has been some speculation as to who will be appointed to fill this post. It is understood that the resignation, effective Aug. 31, has been accepted by the President. The appointment of a new assistant is of special interest to the coal industry because the incoming official will continue to handle the Government's coal cases. Mr. Ames was in charge of the Government's coal cases during the coal strike and injunction proceedings last November.

Railroads Will Force Use of Trucks in Intracity Coal Hauling

THE committee on car service of the American Railroad Association has sent the following circular to all carriers:

To relieve terminal congestion, eliminate switching and increase the car supply for road haul shipments, it is suggested that an embargo be placed against the use of all classes of equipment in intracity movement at each

point where such action will result in improved car handling and increased car supply for general distribution.

A permit system should be inaugurated to protect the movement of such freight as cannot be handled by truck.

The embargo should, so far as practicable, be absolute against the use of coal cars in crosstown movement.

At common points where car-service committees have been established the chairman of the committee should be named as permit agent.

No General Improvement in Car Supply Noted During July

COMMENTING on the car supply and labor situation, the Geological Survey in the last weekly report states that the strike losses reported in recent weeks continued in Alabama and the Kenova-Thacker field. Ten per cent of the capacity of Alabama was closed by strikes in the week of July 24, while in the Kenova-Thacker field more than three-fourths of the capacity was down. Strikes in Kansas and Arkansas were reported sufficient to cause a loss of 10 per cent of full time.

The closing of mines because of labor disturbances reduced the demand for cars and was the primary cause for a decrease in the percentage of time lost on account of transportation disability. Over the country as a whole the transportation loss during the week of July 24 was 29.6 per cent, as compared with 32.3 per cent during the preceding week. Examination of the reports from fields not affected by the strike, however, indicates no widespread improvement in car supply. In some districts a change for the better was, indeed, reported, but in others the losses grew even more acute than before.

Improvement in car supply was reported from the Pittsburgh district, from the Pennsylvania and Buffalo, Rochester & Pittsburgh railroads, sections of central Pennsylvania, from the Cumberland-Piedmont field, the high volatile fields of southern West Virginia, northeastern Kentucky and western Kentucky. In Indiana, Ohio, West Virginia Panhandle, and southeastern Kentucky little change occurred. Among the districts to report a less adequate car supply were Westmoreland, the New York Central district of central Pennsylvania, Somerset, Fairmont, New River, Hazard, and southwestern Virginia.

Opinion Divided on Effectiveness of Reconsignment Order

THAT the Interstate Commerce Commission's reconsignment order will not prove a panacea for speculation in coal is pointed out in many quarters. Many are of the opinion that there is only one really effective way to prevent delays in cars and that is by requiring the operator to produce evidence that the car will be unloaded immediately at its destination. Some advocate that this step be taken in addition to the reconsignment order.

The opinion is not unanimous, even among operators, that the benefits which will be derived from the reconsignment order will outweigh to any great extent the economic losses which will result. The railroads always have been hostile to the reconsignment privilege because of the belief that it results in serious delays to cars. Others hold that in the great majority of cases there is little delay occasioned by reconsignment of the cars. When the commodities shipped originate at a considerable distance from the point of consumption, many believe it to be an economic necessity to load out the commodity at once. Sale can be arranged during the time that the car is moving.

While there is no question that the reconsignment privilege has been abused, there has been a tendency in the present situation not to emphasize the advantages of the plan. Incidentally the Interstate Commerce Commission has held repeatedly that reconsignment is a right and that the privilege must be given at a reasonable rate. The opinion is expressed that it is resale rather than reconsignment of coal which causes the trouble at tidewater.

Exports of Coal in June

FOR the twelve months ended with June, 1920, FOLLOWING the precedent set by New England, the This compares with 18,152,337 tons for the twelve months ended with June, 1919. These figures are those of the Bureau of Foreign and Domestic Commerce. The bureau's figures, giving the details of June, 1920, exports, as compared with the revised figures covering the exports in June, 1919, are as follows:

COAL AND COKE (In Tons)

	June, 1919	June, 1920
Coal:		
Anthracite	474,315	511,951
Bituminous	2,179,201	3,132,253
Exported to:		
Italy	126,881	344,243
Netherlands	43,479	175,189
Sweden	55,270	173,721
Switzerland	101,604	117,751
Canada	1,430,741	1,193,767
Panama	None	10,167
Mexico	14,312	7,003
British West Indies	21,145	5,210
Cuba	84,198	107,609
Other West Indies	8,991	10,828
Argentina	54,796	120,267
Brazil	100,078	64,055
Chile	8,397	35,077
Uruguay	22,758	19,829
Other Countries	105,851	747,537
Coke	56,533	55,420

Committee of Nine Starts Program to Assure Virginia a Coal Supply

FOLLOWING the precedent set by New England, the Governor of Virginia, co-operating with the chambers of commerce of that state, has set on foot a campaign intended to influence the Interstate Commerce Commission to provide for Virginia's coal supply. The committee, which is headed by J. R. A. Hobson, of Richmond, consists of nine of the more influential men of Virginia. Before moving on Washington, through "courtesy," it was decided that the operators of its own state should have a hearing. This led to a meeting in Lynchburg July 29.

After a three-hour executive session the committee concluded that the high prices are due to speculators and warned against dealing with other than legitimate dealers. The Lake and New England orders will put no extra tax on the supply of coal for Virginia.

The coal operators who have been supplying Virginia pledged themselves to co-operate in every way to see that coal moves in regular channels. The machinery has already been set in motion to work this out. Each city will have its own fuel committee and the complaints that come in to them will be taken to the coal associations. Contracts that have not been filled will be taken to the coal associations, but no steps will be taken to take care of the needs of those who are purchasing coal for speculative purposes.

Operators and Jobbers Clash Over Reconsignment Rules

National Coal Association Attempts Modification of Tidewater Pools to Stop Speculation—Jobbers Resent Accusations of Widespread Speculation, Attributing Undue Influence to "Small Selfish Group"

RESTRICTION of the reconsignment privilege in the tidewater movement of coal is the next move of the National Coal Association, according to an announcement made last week. To this end a conference was held in New York on August 4 of a special committee (*Coal Age*, Aug. 5, page 307), which is to be followed by a conference of this committee and Colonel Wentz with Daniel Willard, chairman of the executive committee of the American Railroad Association, in New York some time during the present week. The statement of the coal association says that the move is intended to result in some means being devised to prevent jobbers from speculating in coal that they have obtained from coal operators at a nominal price, and is a "part of the effort of the soft-coal operators to eliminate every species of speculation in the handling of coal, wherever it exists."

Urge More Stringent Reconsignment Rules

While backing the Interstate Commerce Commission's reconsignment order, the bituminous-coal operators represented in the National Coal Association feel that the prohibition against the practice should go further, so as to make it apply to shipments to tidewater either for export trade or transshipment by vessel to American seaboard ports. Means to bring this about are being considered by the committee of soft-coal operators engaged in export trade appointed by Colonel D. B. Wentz, president of the National Coal Association, last week.

The activities of the National Coal Association in having more stringent reconsignment rules authorized by the Interstate Commerce Commission have brought forth a storm of protest from the jobbers, both because they are accused of being permitted through the unrestricted use of this privilege to speculate in coal and because they consider it a move to legislate them out of business. Mr. Cushing, managing director of the national association of the jobbers, has published a letter of protest addressed to E. E. Clark, chairman of the Interstate Commerce Commission, in which "a small selfish group in the National Coal Association" are accused of taking advantage of their close relation to the commission through Mr. Willard and attempting to put the jobber out of business.

To this charge the coal operators have made no reply except to quote the comment of Colonel Wentz, president of the National Coal Association, to the effect that "Mr. Cushing's letter is obviously an attempt to block action to stop the present evil of holding cars loaded with coal at tidewater for speculation."

Mr. Cushing's letter to chairman Clark is as follows:

It becomes necessary for me to direct your attention to the fact that a small, selfish group in the National Coal Association is making use of the power of your commission to punish, if not to destroy, the wholesalers without doing anything to improve the transportation situation.

You will recall that recently I was a witness before your Division No. 5. As is customary, I was put under oath. Having proper regard for the quality of an oath, I told the truth as I saw it. I said that certain agencies of the Government had, by crying famine, created a panic which had advanced the prices of coal. These high prices had given the impression that a shortage existed when as a matter of fact it did not exist at all.

Naturally, I could not recommend that the commission should try to correct the mistakes of judgment on the part of your colleagues in the Government when an unnecessary action on your part would do an injustice to other shippers who had a perfect right to use the transportation facilities of the country.

While I was on the stand this little selfish group in the National Coal Association was in the audience. Among them the remark was passed—and overheard—that: "Now that he is out in the open with that stuff we will get him."

My reason for calling this to your attention is that, with your help, but without your knowledge, they have started to do so.

For instance, immediately thereafter your commission was forced to lean heavily upon the Willard committee for advice as to "constructive" measures. The Willard committee naturally sought the co-operation of the National Coal Association. It is unfortunate for all concerned that this little selfish group was largely represented on that association's conference committee.

To support certain recommendations they made and to prepare the way for others which are in preparation, a campaign of publicity was launched in which the misleading statement was made that mine prices on coal had not exceeded $4 per ton and that the high prices were traceable to a "speculative" element which had inserted itself "between the operator and the consumer."

No Evidence Adduced to Prove Delay

To kill off this so-called "speculative element" a determined attack has been made upon the reconsigning provisions in the railroad tariffs. Before Division No. 5, in the hearing to which I have referred, the statement was frequently made that "undoubtedly the reconsigning privilege has been abused." There was, however, no evidence to support it. Nor was it shown that this so-called "abuse" delayed a single car a single day. The "abuse" referred to was the resale of coal while it was on its way to market. It was not shown, however, that this resale delayed any car. The facts are that while there have been resales of coal the car itself kept moving all the time and that the reconsignment order was ready when the car reached the reconsigning point. You were thus, and falsely, led to believe that this resale of coal, when it did occur, was delaying cars. As a matter of fact it was not and is not.

To show the utter falseness and viciousness of this attack I call your attention to several statements recently issued from the same quarter. One of them was against the Tidewater Coal Exchange. In this statement it is charged that this exchange is a nest of speculators who are holding 5,000 cars out of use for speculative purposes and that the liberal reconsigning privilege allowed by you to this group is perpetuating this so-called vicious system. In that statement this little selfish group overreached itself for two reasons, viz.:

First—No coal moving to the Tidewater Coal Exchange is reconsigned. It is shipped out of the pool, mostly by the water route.

Second—The Tidewater Coal Exchange has not for four months paid a dollar of demurrage. If there had been detentiton of cars, demurrage must have been paid. The fact that no demurrage was paid is the best proof that there was no detention of cars.

You are aware of the fact that the Tidewater Coal Exchange was created as a war measure to save transportation. During the war membership was compulsory. After the war it was continued, at the earnest solicitation of the

railroads, to save transportation. The interest of the railroads in it is indicated by the fact that they pay half of its expenses. However, this little selfish group fought the Railroad Administration when this pool was to be continued and is now trying to destroy it by pleading—contrary to the wish of the railroads—that you make rules under which it cannot operate.

The same selfish little group has taken advantage of its access to the Willard committee to draft new reconsigning rules which serve no purpose which you have in mind—to save transportation—but which serve excellently their purpose, which is to destroy the wholesaler and the smaller mines which market through them.

That you may understand this vicious propaganda in all its nakedness, I call your attention to the fact that the two distressed points of the United States are said to be the Northwest and New England. It is assumed by you and everyone else that these districts are fed respectively through the Lakes and tidewater ports. If it is true that the reconsigning privilege is responsible for the delay of cars, then the places where they should have been the most rigid should have been at the Lake and tidewater ports. However, in the new reconsigning rules as presented to you these places are exempted and the burden of the proposed regulations falls on other parts of the country not now in distress.

I wish also to call to your attention the fact that terminal committees at Detroit and Chicago have issued orders cancelling the reconsigning rules and charges and making other drastic regulations. Having been a member of one of your terminal committees, I know that none of these has any authority to issue any orders at all. They are restricted to "recommending to the commission" the issuance of any orders. This action on their part is a clear violation of your instructions. Nevertheless it amounts to a destruction of the business of the wholesalers.

Seeing how far the so-called "remedies" and "constructive measures" are from the purpose you have in mind and from any legitimate exercise of your powers under the Transportation Act of 1920, I am under necessity to inform you that your powers are being used by this little selfish group to further their own interests without meeting the real problem at all.

And, since they have seen fit to make their assaults upon the wholesalers public and since you have, unwittingly, been led to spread their propaganda through official pronouncements of the commission, I feel at liberty to make public a copy of this letter to you.

Wholesale Coal Trade Association Charges Profiteering by Coal Mines

RESPONSIBILITY for soaring prices for coal is charged to some producers who are "taking unconscionable profits" in a statement issued Saturday, Aug. 7, by Charles S. Allen, secretary of the Wholesale Coal Trade Association of New York City. Mr. Allen also is secretary of the committee that was recently selected by Attorney General Palmer to decided upon what is a fair price for bituminous coal. According to the statement of Mr. Allen, most wholesalers look upon the stories being circulated that the Tidewater Coal Exchange, operated by the wholesalers, is being used for speculative purposes as a "smoke screen" raised to divert attention from the chief cause for high prices, the unprincipled producer.

The statement is as follows:

Attempts are being made to discredit the work of the exchange by interests adversely affected by its operation. Frequently of late our association has had occasion several times to run down the "old woman's story" about the exchange being used for speculative purposes. There is absolutely no foundation for the charge.

In the first place, the exchange officers would not permit it, and, in the second place, the demand for bituminous coal is so great as to make any such performance impractical and uneconomical.

Wholesalers see in this an effort to set up a "smoke screen" to divert attention from one of the main causes for the present high prices of bituminous coal, namely, the taking unconscionable profits by some producers.

The wholesale coal trade of New York, and I think I may say the same of other large coal centers such as Baltimore, Philadelphia and Hampton Roads, heartily approves of the order issued by the Interstate Commerce Commission imposing a storage charge of $10 per day on coal held in cars more than forty-eight hours after arrival. It is noted that this order does not apply to coal sent to tidewater points for transshipment by water when consigned to a pool or pools. The reason for this exception is that the Tidewater Coal Exchange, Inc., has been able to handle shipments passing through it in an average of not less than forty-eight hours.

The Wholesale Coal Trade Association of New York prides itself upon the fact that, due to its activities last spring, the threatened abolition of the Tidewater Coal Exchange was averted at the time the railroads were returned to private ownership. Prior to that time the expenses of the exchange had been borne by the railroads. They then announced they would withdraw their support from the exchange, although it had resulted in the saving of literally hundreds of thousands of car days during its existence and put into prompt use coal-carrying equipment which it would have taken millions of dollars to have built.

These statements may seem extravagant if it is not known that prior to the operation of the Tidewater Coal Exchange there were hundreds of classes and grades of bituminous coal moving to tidewater for transportation to destination in this country. The pools established by the exchange number about thirty, of which less than half are actually active. This concentration results in the elimination of a tremendous quantity of shifting cars at terminals, in addition to effecting the prompt release of cars.

Hampton Roads Dumping at Rate of Over Thirty Million Tons

DUMPING 604,000 net tons in the week of July 31, shippers practically met the requirements of the New England order a week before it went into effect.

Order No. 11, which became effective Aug. 2, calls for 650,000 net tons per month to New England from Hampton Roads, and the preliminary figures for July show about 615,000 tons shipped. The Geological Survey notes that dumpings in the week of July 31 were 51,000 tons over the previous week and that the increase went almost entirely to exports. Of the total dumped the last week of July 136,000 tons were destined for New England, 392,000 for export cargo, 68,000 tons for ships' bunkers, and the remainder for all other users.

An average of 100,000 net tons dumped a day at Hampton Roads gives a new measure of the capacity of the piers. At this rate these piers could handle 30,000,000 net tons in the 300 working days of a normal year, and after giving New England 8,000,000 tons, local markets 1,000,000 tons, and supplying ships' bunkers with 3,000,000 tons, there would be left 18,000,000 tons for export a year from this port alone.

Lewis Commits President Wilson to Readjustment of Wages

NOW that most of the striking miners in Illinois and Indiana have returned to work it is expected momentarily that the President will request the scale committee to consider an adjustment of wages.

Particular note was taken of the fact that Mr. Lewis displayed much shrewdness by inserting in his reply to the President his interpretation of the President's message to the effect that a conference of the scale com-

mittees would be called as soon as the men went back to work. He also took care to weave that interpretation into the record when he issued his order to the men.

Chief blame for the strike is being laid to the assigned car practice. The strike had its start in localities where the practice of assigning cars left many mines with only enough cars to work a day or two a week.

New Consignment and Demurrage Rules Are Authorized

Carriers Are Permitted to Increase Charges for Car Detention to $10 Per Day—Expected to Curtail Speculation

NEW reconsignment rules and penalty charges for detention of equipment, emergency penalty charges for detention of all open-top cars and cars loaded with lumber, coal or coke were issued by the Interstate Commerce Commission on July 31, in the form of a special permission numbered 50,321. The document states that all railroads are authorized to put into effect, through amendments to their tariffs, the provisions proposed by the commission. Although the commission does not direct the carriers to take advantage of the rules proposed, it is understood that the form in which the matter is presented practically makes it a mandatory order.

It is quite generally believed that the roads will endeavor to have the new rules in effect prior to the filing of the increased freight tariffs late this month, in order that the increases allowed will be applicable to the penalty charges permitted by the Interstate Commerce Commission under this latest ruling.

Under the new rules but one reconsignment of freight in open-top cars and coal and coke in all cars will be allowed, for which there will be a charge of $2 per car if the order is received while the car is en route; a charge of $5 per car if the order is given within twenty-four hours after the car arrives, or if the reconsignment order is given more than twenty-four hours after the arrival the charge shall be $5 per car plus local freight or switching charge to new destination. There is no time limit on these provisions.

Until the close of business Jan. 1, 1921, the carriers are permitted to charge an additional $10 per car per day for demurrage when cars are held over the free time allowed. None of the rules is to apply to tidewater or Lake port delivery whether or not for reshipment by water, nor for coal consigned to Lake ports and left after the close of navigation.

It is pointed out that these new rules are to affect only inland trade and are no more drastic than rules recently put into effect by local authorities at Chicago and one or two other points. Since one reconsignment is still permitted the jobber may ship his coal blind, in order to conceal from the producer the actual consignee, at a cost of about 4c. per ton. The new rules will certainly discourage indiscriminate holding of coal in cars, and if, as at Chicago, coal is held over the twenty-four hour limit, rebilling to points beyond can be done only by paying additional local and higher freights.

It is admitted by those well informed on the subject that these new rules may in a few instances work a real hardship on consumers, but it is asserted that the practices that are made prohibitive are not generally necessary in the proper distribution of coal and that the principal effect will be to limit speculation.

Stocks of Bituminous Coal Lowest on Record

STOCKS of bituminous coal in the hands of various classes of consumers, expressed in terms of weeks' and days' supply at the going rate of consumption are contained in the weekly report of the Geological Survey for Aug. 7. Mr. Tryon had previously published estimates of total stocks of bituminous coal at various dates from Oct. 1, 1916, to date (*Coal Age*, Aug. 5, p. 306), and the data contained below give greater detail with respect to the distribution of the stocks between classes of consumers.

It was shown that total commercial stocks had ranged during the period over which the records extend from 27,000,000 tons in the fall of 1916 to a maximum of 63,000,000 tons on the day of the armistice. It was further shown that stocks on June 1, 1920, were in the neighborhood of 20,000,000 tons, the lowest figure at any time for which data are available.

Comparisons of the total amount of coal in storage at different dates, according to Mr. Tryon, do not, however, take into account variations in the rate of consumption. Not only does the weekly consumption of coal vary with the season but it also varies with the general activity of business. Furthermore, there is a steady increase in the normal consumption of coal,

Bituminous Coal Movement to Tidewater Sets New Record

TIDEWATER shipments during the week ended July 31 established what is believed to be a new record for coal handled over tidewater piers in a single week.

The total dumpings at the four North Atlantic ports and Charleston, according to reports furnished the Geological Survey by courtesy of the American Railroad Association, were 27,461 cars. This exceeded the preceding week by 1,771 cars and was 4,661 cars greater than the weekly average for June, 1920, hitherto the maximum month.

The total dumpings for the month of July were 104,826 cars—at New York, 34,918; Philadelphia, 13,420; Baltimore, 14,109; Hampton Roads, 40,791; Charleston, 1,588.

On the basis of car figures it is estimated that tidewater dumpings in July were 5,000,000 net tons, a new high record.

WEEKS' SUPPLY OF BITUMINOUS COAL IN HANDS OF CONSUMERS IN THE UNITED STATES

(Figures expressed in weeks and days at current rate of consumption at time of stock-taking)

	Oct. 1 1916	Oct. 1 1917	July 15 1918	Oct. 1 1918	Nov. 11 1918	Jan. 1 1919	Apr. 1 1919	Mch. 1 1920	June 1 1920
Byproduct coke plants	No data	No data	4–0	4–4	5–0	4–4	3–2	2–1a	1–1a
Steel plants	3–4	3–6	3–6	6–3	6–3	6–0	5–0	1–2a	1–4a
Other industrials			6–6	10–0	10–1	10–2	6–5	3–6	3–3
Artificial gas	No data	No data	10–2	12–0	12–1	10–0	8–2	4–3	3–1
Other public utilities	No data	No data	4–3	5–6	6–2	7–1	7–1	3–0	3–1
Coal dealers	No data	No data	2–0	4–0	5–2	5–4	3–4	1–6	1–3
Railroad fuel	2–6	2–4	3–3	3–6	4–1	4–6	No data	1–4a	1–3a

a-Estimated from incomplete data, subject to revision.

irrespective of weather or business conditions. All of these factors make it desirable to express the stocks of coal not only in terms of tons but also in terms of weeks' supply at the prevailing rate of consumption. An attempt to do this has been made in the preceding table, in which the number of weeks' and days' supply on hand for seven great groups of consumers of bituminous coal is shown at intervals from Oct. 1, 1916, to June 1, 1920. The table brings out strikingly the fact that stocks on the latter date were lower than on the other dates for which observations are available. This was not only true of stocks as a whole but was also true of each of the seven groups of consumers.

Revolt of the Day Workers Appears To Be at an End

One Cause of Trouble Is Union Politics—Fly-by-Night Operators Are Willing to Pay Increase Asked, Recouping Themselves on Spot Coal Prices.

DAY workers everywhere, even in Illinois, are going back to work. In Indiana only one local directly refused to obey the order and that probably was because of a misunderstanding of the situation. But, unfortunately, the men are returning with the idea that they are to have a concession and with the full assurance that striking pays. So long as that idea persists there will be no end to strikes or to wage increases and advances in the cost of living.

The Bituminous Coal Commission or whatever body decides the matter will, it is hoped, not be stampeded and caused to make a decision based on mere opportunism. The commission gave this subject due thought in making its original award and decided that day workers had fared so well during the war that they were entitled to a lower advance than was given to the miners. An arbitration board which revises its own decision at the threat of a strike is not an arbitral board in any sense of the word.

Moreover, there are signs that a concession to the day workers will not even begin to settle matters. On July 28 a meeting was held at Springfield to demand more wages for the miners. It is likely that nothing much will come of this movement till the day workers get what they want and that it will die altogether if the daymen lose their case, but the move may be expected to gain in strength if the shift men are successful in enforcing their wishes on the arbitral commission. When Farrington heard about the movement he said: "That is a move by radicals. They may hope to muss up the situation so that the shift men will not get an increase in wages." However, there is reason to believe that a weakness on the part of the wage commission anywhere along the line may prove an incentive to the malcontents, who will attempt to break it at all points.

Of course, some men are willing to pay the wages demanded. Men who run wagon mines, who work their plants only when spot coal is selling at any price demanded, are always willing to exceed the union rate. They do not expect to be in business later and they have no contracts to meet. Frank Farrington on July 27 declared that twenty-two small concerns had agreed to pay the $2 increase to day workers and he had authorized the fourteen executive board members of the Illinois district to sign up contracts providing for these "outlaw" wages. He said the new contract signers were twelve in the Danville district, one at Tamarra, two at Cutter, two at Pinckneyville, one at Sparta, one at Springfield and three in the Peoria district.

Even in central Pennslyvania the wage rates for the mining of coal have been boosted to $2 a ton. This increase was received only in the fly-by-night mines, some of which have perhaps been started really by the larger companies though ostensibly owned by individuals. Where a company has long-time contracts which absorb all its coal the only way for it to get in the spot-coal market is to start a new mine under apparently independent control.

Alleging that something like this had been done in the Bennetts Branch in Elk and Jefferson counties, the miners of the Shawmut Mines at Force and of the Cascade Coal & Coke Co. at Tyler have threatened a strike. They think they should receive $2 a ton, the amount paid at the independent coal banks.

Union politics is alleged to be back of much of the trouble. Frank Farrington is said to be backing Robert H. Harlan, of Washington, for president and Alex Howat of Kansas for vice president on a campaign of aggressiveness in which all prudence and contract-keeping would be thrown to the winds. J. L. Lewis is backing Paul Smith, of Marion, Ill., against Farrington for the presidency of the Illinois district.

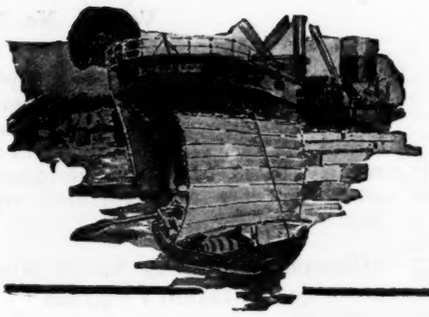
Farrington is declared on all hands not to be serious in his declarations in favor of the return to work. In relation to the President's letter he is quoted as saying, "I don't care to offer any predictions except to say that the Illinois miners are pretty well fed up on appeals and have now reached the point where they want something substantial." Freeman Thompson, president of subdistrict No. 4, openly accused Farrington of failing to send out letters demanding a return to work, while all the time declaring that he had done so.

The mine workers in the Pittsburgh district tried to obtain a conference with the operators relative to the wages of day workers, but failed. In Iowa Secretary George Heaps for the operators clearly showed that resistance to an abrogation of the wage contract was not as strong as might be wished. "The question will be put to a vote of the operators," he said. "If they wish to set aside the contract, we will arrange for negotiations with the miners."

In Michigan also the mine workers made a demand for revision, declaring the $6 rate unsatisfactory, but the operators refused to discuss the matter. They promised, however, to follow the lead of the Central Competitive district. Strange to say, better word comes from John Wilkinson, district No. 21. He says that "Every effort will be made to prevent a strike of coal miners in Oklahoma." He declares that there would be no difficulty if the car shortage were ended and steadier work made it easier for the daymen to earn a good wage.

Rail Shipments to New England Heavy

RAIL movement of bituminous coal to New England continued to be very heavy during the last week of July. According to reports furnished the Geological Survey by the American Railroad Association, 6,368 cars were forwarded to New England destinations through the five Hudson River gateways of Harlem River, Maybrook, Albany, Rotterdam and Mechanicsville. With the exception of the preceding week, this was the largest movement of the year and one of the largest on record. It was 1,489 cars, or 30 per cent, greater than that of the corresponding week of 1919.



Foreign Markets and Export News

Coal Imported by San Francisco

Coal imports into San Francisco from Jan. 1 to June 10, inclusive, as compiled by the Marine Department of the San Francisco Chamber of Commerce, were as follows:

	Tons
From British Columbia by water	6,220
From Australia	2,014
Total	8,234
From Washington by water	115
From Eastern coast by water	19,773
From Eastern States by rail	103,634
Total	123,522
Grand Total	131,756

Australian Gas Company to Install Byproduct Plant

The Melbourne & Metropolitan Gas Co., of Australia, which carbonizes 250,000 to 300,000 tons of coal per annum, is considering plans for the installation of an extensive distillation plant for the recovery of benzol and other coal-tar products which now run to waste. The company is encouraged in this action by the success of the byproducts installation of the Australian Gas Light Co. at Sydney, which recovers at present 30,000 gallons of benzine and toluene, 150,000 gallons of disinfectant oils, 30 tons of crude naphthalene, and 400,000 to 500,000 gallons of liquid fuel.

Output in Queensland Shrinks, But Value Rises

The total amount of coal mined in Queensland during the year 1919, according to trade reports by the U. S. Bureau of Foreign and Domestic Commerce, was 931,631 tons, having a value of £614,307, which is a decrease of 51,562 tons in quantity, but an increase in value of £42,002 compared with the production of 1918.

The seamen's strike caused a great diminution in the requirements for bunker coal, and this led to a heavy fall in the production.

The average cost per ton of coal at the mine's mouth for the whole state during 1919 was 13s. 2½d., this being 1s. 6½d. higher than during the preceding year.

British Coal Trade Shows Profits Only on Export Business

Editorial comment in the Liverpool *Journal of Commerce* on costs and profits in the British coal industry affords interesting comparison with conditions in this country. The editor of this paper states:

"The official statement of the costs of production, proceeds and profits of the coal mining industry for the first quarter of this year are pretty much what were generally expected in colliery commercial circles, i.e., the only areas where a profit for the period would be recorded were those from which a considerable proportion of outputs were sold for exports. South Wales heads the list with a profit of 18s. 7.67d. per ton; Northumberland, 18s. 5.21d.; Durham, 18s. 4.85d.; and Yorkshire, 10.26d. per ton. Why the last named area is so small in comparison to the others is to be explained by the fact that the proportion of output sold for export was also a small one. Of the six areas that show a loss for the period, the larger is for Cumberland and Westmoreland, of 10s. 3.57d. per ton, and the smallest for Scotland of 2.17d. per ton.

"The tonnage sold for export during the quarter was 8,365,769 tons for which an average f.o.b. price of 72s. 10d. was obtained. The average f.o.b. price for last month was 80s. 9.6d., but as from the 7th inst. the tonnage that is to be allowed to be exported is restricted to 5.25 million tons per quarter, it will readily be seen how, with a reduction of 3.1 million tons per quarter for export sale, the profits of the industry will be affected—to say nothing of the loss of revenue of something like £12,000,000 to the country.

"Certainly, during the March quarter, the average profit for the whole country was 5s. 1.97d. per ton, which, on the surface, looks very satisfactory; out of this, however, provision has to be made for depreciation, interest on debentures, and other loans, capital adjustments under the Finance Acts, and the profits to which the owners are entitled to under the Coal Mines (Emergency) Act, 1920, so that the net profit per ton will be substantially less than 5s. 1.97d.

Briquets to Be Made From Coal in Winnipeg

Published reports according to Consul General J. I. Brittain, Winnipeg, Canada, say that the Lignite Utilization Board, which has been for months experimenting with the problem of cheaper fuel for domestic use from the low-grade coal found in southeastern Manitoba and Saskatchewan, has arrived at a satisfactory manufacture of briquets that will probably produce fuel equal to the best grade of the United States anthracite coal, and which will be even more satisfactory for domestic use.

An experimental plant with a capacity of 30,000 tons a year will be erected, doubtless near the mines in Saskatchewan.

The chairman of the board further says that a careful analysis of the costs leads to the belief that briquets can be manufactured and loaded on cars at the plant at about $7.50 a ton.

Deny Higher Wages and Cheaper Coal to British Miners

After a Cabinet meeting held at London July 26 to consider the British miners' demands it was intimated to the miners' executive that their combined request for cheaper coal and higher wages could not be granted. A serious industrial crisis is thus threatened, the miners' delegates having decided to call a national conference to consider future action.

Freight Rates to Europe Continue to Soften

W. W. Battie & Co.'s coal trade freight report announces that freight rates to European ports are decidedly softer than they were a week ago, and that tonnage for shippers to these destinations can be obtained at favorable rates. Freight rates to South American ports are unchanged, but to West Indian ports they are easier.

Freight rates by steamer are as follows:

Destination	Rate	Tons Discharged Daily
Malmo	About 14.50 —	1,000
Copenhagen	About 14.50 —	1,000
Stockholm	About 15.00 —	800
Gothenburg	About 14.50 —	1,000
Antwerp/Rotterdam	About 13.00 —	1,000
Hamburg	About 14.50 —	1,000
French Atlantic ex. Rouen	About 13.50 —	700
Algiers	About 15.50 —	800
West Italy	About 15.50 —	1,000
Marseilles	About 15.50 —	1,000
Piraeus	About 16.00 —	1,000
Trieste/Venice	About 16.00 —	1,000
Port Said	About 16.50 —	1,000
Constantinople	About 16.50 —	500
Gibraltar	About 14.00 —	1,000
Pernambuco	12.00/13.00 —	500
Bahia	12.00/13.00 —	500
Rio	11.00/12.00 —	1,000
Santos	12.00/13.00 —	600
Buenos Aires or Montevideo or La Plata	11.50/12.50 —	1,000
Para	12.00/13.00 —	500
Rosario	About 13.00 —	750
To Nitrate Range	About 9.00 —	750
Havana	About 6.00 —	500
Sagua or Cardenas	7.50/ 8.00 —	300
Cienfuegos	About 7.00 —	500
Caibarien	7.50/ 8.00 —	300
Guantanamo	7.00/ 7.50 —	500
Manzanillo	About 9.00 —	300
Bermuda	About 6.50 —	300
Bermuda p. c. and dis. free		
Kingston	7.00/ 8.00 —	400
Barbados	About 8.00 —	500
St. Lucia	About 8.00 —	500
Santiago	7.00/ 7.50 —	500
Port of Spain, Trin	About 8.00 —	500
Curacao	About 8.00 —	500
Free p. c. Curacao		
Demerara	13.00 —	400
St. Thomas	About 7.50 —	500

All above rates gross form charter

Exports of Coal from Calcutta, India, 1918-1919

Countries of Destination	1917-18 Tons	1917-18 Value	1918-19 Tons	1918-19 Value
Foreign trade:				
Ceylon	153,131	$445,772	84,001	$303,345
Straits Settlements	68,595	203,420	43,072	136,911
Sumatra	8,474	27,902	8,771	35,688
East African ports	13,776	44,447	.....	.....
Australia	6,000	22,385	.....	.....
All other countries	4,527	19,148	7,098	25,568
Totals	254,503	763,074	142,942	501,512
Coasting trade:				
Bombay	2,497	8,111	.....	.....
Burma	186,872	554,456	92,889	292,639
Madras	13,837	36,012	8,433	27,252
Bengal	600	1,947	.....	.....
All other ports, including Indian ports not British.	3,018	10,706	.....	.....
Total	206,824	611,232	101,322	319,891
Bunker coal	439,798	1,311,684	401,200	1,406,744
Grand totals	901,125	2,685,990	645,464	2,228,147

American Coal Urgently Needed in Sweden

Consul General Dominic I. Murphy, Stockholm, reports that for the past two months inquiries as to the possibility of getting American coal to Sweden have been insistent. As the supplies on hand are rapidly disappearing, American coal exporters have now the opportunity to dispose of many thousands of tons.

A prominent member of the Board of Trade informs this office that no coal is coming from Germany, and but little more can be expected. The import has fallen off tremendously from England. He remarked: "If you Americans can help Sweden to get coal now, you will have, not only the gratitude of our people, but you will be able to keep our trade as well."

Several of the most prominent Stockholm dealers have been furnished by this office with lists of American coal-mining companies and wholesale dealers, but the invariable report is that they find it quite impossible to get satisfactory replies to their cabled inquiries. So great is the anxiety regarding the coal supply that several very important concerns are about dispatching representatives to the United States to purchase.

Coal Consumption by London Gas Companies in 1919

The *Gas World* publishes tables of analyses of the accounts of a number of important gas companies in the London district, the *Colliery Guardian* states. Of these, the Gas Light and Coke Co. consumed 2,725,754 tons of coal and coal equivalent; the South Metropolitan Co., 1,173,412 tons; Brentford Gas Co., 417,683 tons; Commercial Gas Co., 309,346 tons; South Suburban Gas Co., 267,065 tons; Wandsworth Gas Co., 250,686 tons; Tottenham Gas Co., 233,681 tons; Croydon Gas Co., 153,362 tons.

Of the fifteen companies appearing in the tables, the largest production of gas per ton of coal was 13,142 cu.ft. and the lowest 10,176 cu.ft. The range of products per ton of coal was as follows: Coke and breeze available for sale, 14.8 cwt. to 8.9 cwt.; tar made, 10.9 gal. to 8.3 gal.; ammoniacal liquor, 30.8 gal. to 19.8 gal. (several companies make their returns in terms of sulphate of ammonia, ranging in these cases from 13.9 lb. to 23.2 lb.).

The cost of coal and equivalent varied from 25s. 10.62d. to 38s. 7.80d. per ton, and from 25.92d. to 42.66d. per 1,000 cu.ft. of gas sold, or, deducting revenue from residuals, from 14s. 1.39d. to 20s. 9.99d. per ton, and from 12.97d. to 24.97d. per 1,000 cu.ft. The total receipts from residuals ranged from 10.89d. to 25.98d. per 1,000 cu.ft.

Hungary Imports Coal from Czechoslovakia

Imports of coal by Hungary during December, 1919, and January and February, 1920, according to data obtained from the Department of Commerce at Budapest by William F. Upson, representative of the U. S. Department of Commerce at Vienna, amounted 5,930 metric tons. Czechoslovakia was the exporting country.

Canada Suffers Gasoline Shortage

Advertisements asking everyone to conserve gasoline are being run throughout Canada by oil companies, according to a report by Consul Felix S. S. Johnson, Kingston, Ontario. There is said to be a shortage of gasoline, and it is reported that in the last few years the demand for crude petroleum, practically all of which comes from the United States, for the manufacture of gasoline in Canada has increased more than 650 per cent. In the same period production has increased about 150 per cent. A shortage of crude oil and high prices necessarily follows. Pennsylvania crude is today costing $6.10 and Oklahoma crude $3.60 per barrel at the wells, and these prices must be paid in American funds, which adds another 15 per cent.

The oil-producing companies claim to be sparing no expense or effort to meet the growing demand for petroleum products, but notwithstanding the best efforts of these companies the demand is growing ahead of production by leaps and bounds. The only apparent solution is to use all petroleum products, especially gasoline, economically and efficiently.

Those who have carefully studied the subject say that one-half gallon of gasoline per car is wasted daily in Canada through carelessness, the overuse of cars, and needless mileage, which means 200,000 gal. wasted daily in the country, or 73,000,000 gal. per year if all motor cars were operated every day.

German Miners to Adopt Mine Socialization Program

The German Miners' Conference held at Bochum recently, states the *Colliery Guardian*, adopted a resolution calling upon the new Socialization Commission to draw up a program for the early socialization of the mines on lines which would preserve all the advantages of private working while eliminating the anti-social disadvantages attached to undertakings when worked by private capital.

With regard to the question of wages, the creation of a wage-scale agreement for all Germany was demanded. It was unanimously conceded, however, that continual fresh advances in wages would avail nothing so long as the prices of essential foodstuffs, etc., continued to increase, the only hope for the worker being a general reduction in prices.

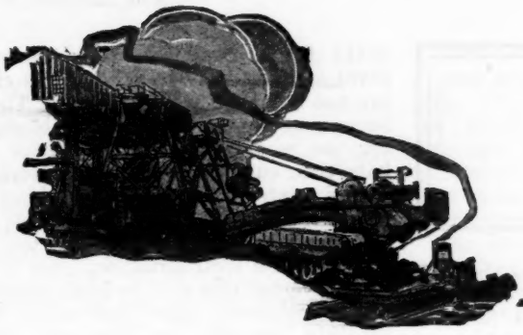
Reference was made to the danger of the miners' settlements, now in course of creation, becoming "works colonies," and legislation for the formation of building co-operative societies to counter this danger was demanded. The acts relating to the control of the coal and potash industries were described as in need of revision, special stress being laid upon the necessity of giving the workers and employees a larger share in the enforcement of the regulations in question.

Belgian Coal Prices

The official prices of Belgian coals as reported by the *Colliery Guardian* are as follows:—Large coals and cobbles, 113 fr.; large nuts, 115.50 fr.; *têtes de moineaux*, 118 fr.; *greusins*, 113 fr.; washed *grains*, 83 to 88 fr.; rough slack, 68 to 78 fr.; half-washed slack, 76 to 82 fr.; washed slack, 76 to 83 fr.; washed coking coals, 88 fr.; rough *fines*, 72 to 83 fr.; half washed *fines*, 84 to 92 fr.; small (*dépoussières*), 94 fr.; screened above 25 mm. 115.50 fr.; unscreened, 83 fr. to 110 fr.; forge coals, 98 fr. to 118 fr.; briquets, 136 fr. to 143 fr.; *boulets*, 126 fr. to 128 fr. Where used for domestic purposes the above prices are subject to a reduction of 3.50 fr. per ton.

During June 31,671 tons of German coking coal were received in addition to 19,043 tons of coke. In the first five months of this year Belgium imported 223,700 tons of coal, 54,500 tons of coke, and 138,700 tons of briquets. Exports comprised 595,500 tons of coal, 73,300 tons of coke and 68,700 tons of briquets.

On July 1 there were 17 blast furnaces in operation of the 52 in existence, with a daily capacity of 2,666 tons, as compared with 12, of 1,582 tons capacity, on January 1. All figures are in gross tons.



Production and the Market

Weekly Review

Production Recovering from Strike—Middle West Labor Situation Much Improved—Heavy Lake and New England Shipments Continue—Improvement in Car Supply in Prospect—Prices Remain Firm

THE effect of the strike of daymen in the Middle West is indicated by the figures of the Geological Survey, which show a production of 9,357,000 tons of bituminous coal for the week ending July 31. This is a slump of approximately one million tons as compared with previous week's output and 1,500,000 tons below the latest pre-strike week. Reports from the Middle West indicate an indifferent attitude on the part of the men whether or not they return to work. Late advices, however, show a steady improvement in the situation, with more mines resuming operations daily. The anthracite output increased 104,000 tons over the previous week with a production of 1,874,000 net tons. Production of beehive coke decreased 4 per cent, or about 15,000 tons for the week ending July 31.

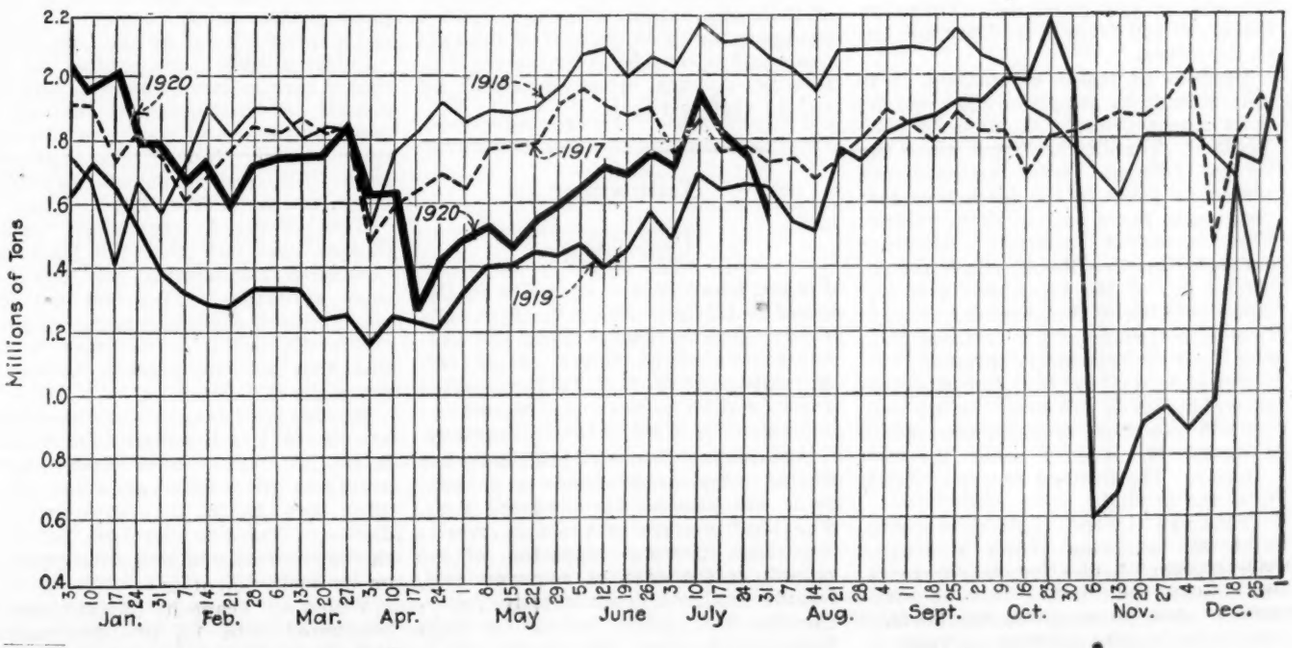
Heavy shipments have been moving to New England and the Lakes, due to the co-operation of railroads and operators in carrying out the provisions of the new service orders. Shipments to Tidewater also show a marked increase. Some apprehension is being displayed by industries and dealers in Ohio and Michigan and other nearby areas because of the small balance of tonnage left after assigned cars and priorities are supplied. Better car supply seems to be in prospect, however, as a result of a general clean-up in yards and terminals during the strike lull.

Lake shipments are slowly gaining under recent priority rulings. Preliminary figures for the week ending Aug. 7 show that approximately 780,000 tons of cargo and fuel coal were dumped, a gain of about 40,000 tons when compared with figures for the previous week. Next week's dumpings should establish a record for this season, as there is every indication of an extremely heavy movement to the Lakes.

Lake Coal Dumped Season to Aug. 7
(NET TONS)

	Cargo	Fuel	Total
1919.....	13,412,668	606,831	14,019,499
1920.....	7,058,257	514,773	7,573,030

Average Daily Production of Bituminous Coal



*From weekly report of Geological Survey.

Reports From the Market Centers

New England

BOSTON

All-Rail Route Is Again Open — Spot Market Continues Strong — Assigned Cars a Factor—Transportation Handicaps Make It Difficult To Judge Effect of Latest New England Priority—Increased Receipts Are Due to Course of Trade—Anthracite Situation Is Slightly Better—Outlook Is Improved for New Haven Shipments.

Bituminous — The reopening of the Boston & Maine gateways on Aug. 6 has once again removed all restrictions to all-rail movement. An extra volume of steam grades is known to have been loaded on cars in anticipation and a record movement that may exceed 7,500 cars for the week is more than likely. More than likely also it will result in renewed embargoes in another ten days or less.

Prices sagged from $13 to $11 for fair-grade low volatiles from the Pennsylvania districts while most of this territory was embargoed, but spot coal is still in strong demand and already $12 sales have again been reported. It is clear that average stocks for most of the large plants have nearly doubled in the past 45 days, but some of this is due to diminished consumption.

A new factor in current market is the increased use of assigned cars as recently authorized. Utilities here have taken full advantage of this privilege, applying the cars partly on contract, but also on spot purchases. Prices on the latter run from $5@$6 per net ton at the mines.

Because of traffic restrictions it is still difficult to gage the effect of the most recent priority in favor of New England. The districts from which the largest tonnages were assigned are served by roads in the least favorable position to move coal in extra volume. The smokeless districts delivering through Hampton Roads, where the facilities are of the best, have been assigned so little of the increased tonnage that normal shipments over those piers are likely to be scarcely affected.

The June total for New England from Hampton Roads was only slightly over 100,000 tons more than the total quota assigned for August under the new priority. The damage to export trade thus far is slight.

Although righting itself quite gradually, the situation shows a distinct trend toward better supply, due to remunerative spot prices that have the effect of stimulating production and attracting coal from other markets.

Within a day or two the Massachusetts state government has shown a disposition to let well enough alone, for it is now understood that J. J. Storrow has withdrawn from all active interest in the current situation.

Current quotations on bituminous at wholesale range about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, net tons	$10.75@$11.50	$11.25@$12.50
Fo.b. Philadelphia, gross tons	13.95@ 14.80	14.50@ 16.00
F.o.b. New York, gross tons	14.25@ 15.20	14.90@ 16.50

Pocahontas and New River are quoted f.o.b. Boston or Portland at $15.25@$16.50 per gross ton for spot shipment. Pennsylvania coals of fair grade are being sold at $5.25@$6 per net ton f.o.b. mines when in "assigned cars."

Anthracite — Receipts of domestic sizes show a small gain both all-rail and by water. The New York piers are functioning better and the favorable weather has meant improved barge movement. At Philadelphia the outlook is less encouraging for the moment. Large numbers of the striking trainmen are holding out for reinstatement on their old ratings.

Since this means the more experienced hands are away from their places the piers are not able to handle anything approaching normal tonnage. The result is an accumulation of barges at Port Richmond and the loss of much valuable time.

The New Haven RR. has now made an arrangement to furnish 200 cars per day to the anthracite-originating railroads with a view to distribution by the producing companies themselves of their own output. This is a decided change in policy on the part of the railroads and is considered by the trade to forecast a much better movement by rail to that territory.

Tidewater

NEW YORK

Prepared and Steam Sizes Are in Demand — All-Rail Dealers Offer Big Prices—Steam Grades Tend To Advance — Soft-Coal Buyers Hold Off, Expecting the Market To Turn—Lake Priority Affects Eastern Shipments—Movement of Coal at Piers Improves

Anthracite—Hard-coal prodoucers are unable to make much headway in satisfying the demand for prepared sizes. The local market is probably receiving about its usual proportion of the output in the case of company coal, but the smaller independents are favoring the line trade because it pays better.

All-rail dealers are offering from $12 @$13 for prompt shipments of nut, stove and egg but retailers in this city are not buying at these figures. Their sources of supply are well established, for the most part, and they hope to have their customers fairly well stocked up by winter. The tonnage attracted to other markets by higher prices is too small to be much of a factor in relieving the local situation, even if it were diverted this way by local bidding.

The companies made their usual 10c. monthly advance on domestic sizes Aug. 1. Most of the steam sizes are in active demand and are showing a trend toward higher prices. Buckwheat from independent operations commands from $5@$5.75; rice, $3.50@$4.25; and barley, $2@$2.75.

Current quotations for company coal, per gross ton, at the mine and f.o.b. New York Tidewater, lower ports, are as follows:

	Mine	Tidewater
Broken	$7.50@$7.65	$9.35@$9.50
Egg	7.50@ 7.65	9.35@ 9.50
Stove	7.75@ 8.00	9.60@ 9.85
Chestnut	7.80@ 8.00	9.65@ 9.85
Pea	6.05@ 6.45	7.80@ 8.20
Buckwheat	4.00@ 4.10	5.75@ 5.85
Rice	3.00@ 3.50	4.75@ 5.25
Barley	2.25@ 2.50	4.00@ 4.25
Boiler	2.50	4.25

Bituminous—Soft-coal prices, while off somewhat from the high levels recently prevailing, still range between $10 and $12 a ton. Buyers are showing more of a disposition to hold off, in the belief that the market is turning in their favor and that this tendency will become more pronounced in the course of the next few weeks.

That the decline has not been more rapid is due to the absence of any large offerings of spot coal. Car supply has shown some improvement, and this is utilized to make heavier shipments on contract.

The Lake priority order is a factor keeping down eastern shipments, especially of gas coals. For this reason Pool 34 coal has been firmer than medium-grade low volatiles which are in relatively better supply; central Pennsylvania is not affected by the Lake order.

Public utilities have applied for assigned cars in large numbers, and the general car distribution is further reduced by the use of equipment for carrying out the New England priority order. Assigned-car buyers are getting plenty of coal at from $5@$7 a ton.

New England consumers expect cheaper coal now that the Interstate Commerce Commission has come to their assistance. They are not displaying much eagerness to buy at present levels, but it is too soon to tell what they will finally get in the way of concessions.

Movement of coal over the local piers has shown a substantial improvement in the last two or three weeks and is averaging above 1,000 cars a day. Tonnage standing at the ports awaiting discharge has also increased, but it is chiefly contract coal and is not pressing on the market.

Prices at tidewater remain around $15.50@$16 f.o.b. for coal at the piers, and from $16@$17.50 alongside for loaded boats.

BALTIMORE

Soft Coal Continues To Be Sold at the High Dollar with No Relief in Sight—Embargo on Exports Adds to the Trouble — Hard-Coal Receipts Are Light with Heavy Demand.

Bituminous—Little change is noted in the soft-coal situation. Adding to the troubles of the coal trade with its recent priority, which required that coal destined for use at this port be sent west and to New England, the Pennsylvania and the Baltimore & Ohio ordered an embargo on all coal destined for export. A permit is now required before any coal can come to the piers.

There is little change in the price situation, prices f.o.b. mines ranging from $10.75@$13, with little attention being given to the grades. Sales made at the piers per gross ton continue around $18. Both local and export markets are unchanged.

There still remain in the harbor about 60 ships waiting cargoes. Only a few hundred cars are reaching Canton and the dumpings have been under 200 cars, while the pools there have less than 200 cars. During the week there were days when no cars were dumped.

The car supply on Baltimore & Ohio continues around 60 per cent. The pools at Curtis Bay have about 2,000 cars, with about 2,300 cars running to this city.

The exporting during this week was quite restricted, the loading being limited to a few vessels, with not much relief in sight during the coming week. July export figures show that 73 vessels carried coal to 12 countries to the amount of 398,437 cargo and 39,907 bunker. The vessels in port are awaiting cargoes in excess of 200,000 tons, aside from the bunker.

Anthracite—Hard-coal men are still groping about for a solution of the present situation, which forces them to pay high premiums for a little coal and to sell the same at a loss under the present schedule of prices. Receipts continue quite light and dealers with large equipment are daily pocketing a loss with no apparent relief in sight.

PHILADELPHIA

New Freight Rates Will Increase Anthracite Prices — Shipments to Local Yards Are Light — Steam Trade Is Quite Active—Bituminous Is High, but Tends To Drop—Tide Trade Is Quiet, Due to Lack of Permits.

Anthracite.—It is now announced that the new freight rates will become effective Aug. 26 and this will add from 65c. to 85c. a ton to the cost of the coal to the retail dealer. Uufortunately for the retail man he has little coal to deliver to his customers.

In addition to the freight rates, the independent shippers have added 25c. to their former mines prices, which makes their rates now $9 for egg, stove and nut, and $7 for pea coal. It is thought that the domestic sizes will not sell for less than $16 to the consumer, following the addition of these latest advances.

Thus far the month has been quite a poor one in the way of receipts of fuel. The embargo on shipments via the Reading Railway still continues, although a certain amount of coal is allowed to trickle through despite this. This causes complaint on the part of the dealers.

The steam trade is growing particularly active, with buckwheat well over the $5 mark for current deliveries. Some prices have been heard at even 75c. above this. Such sales are being made by the independents, but company shippers maintain a circular price of $4.10 and are not accepting any new trade now. Rice readily brings $3.75@$4. Barley grows in demand.

Bituminous.—While coal continues high in price, there is a downward tendency. This is shown by the fact that since the $15 price dropped two weeks ago, most sales have been at $13. Also there is an inclination to make sales again on the basis of the pool rating. Most all of the $13 sales were for Pool 9 fuel recently, with $12 and $11.25 for Pools 10 and 11, respectively.

Recently there has been some sales of Fairmont coals, irrespective of pools, at prices higher than the Pennsylvania steam grades. The New England priority orders have driven the bulk of this coal to the southern piers, with little gas coal left for the all-rail market of this district. However, there is a slight slackening even in this grade and prices recently have been close to $12.

Although the demand for coal continues strong in this market, the trade in a measure seems to be holding off.

The tide trade is particularly quiet and but little coal is coming to the piers for export. This is due to the lack of permits for this class of business and has for the time resulted in a virtual embargo against overseas shipments. It is believed that in time a big export tonnage will be built up, as this always has been claimed to be the real necessity of the bituminous trade in this country.

Lake

BUFFALO

Situation Changes But Little with Slight Decline in Price — Anthracite Stocks Reduce — Cake Is in Demand, but Tonnage Scarce with Prices Maintained.

Bituminous—The situation does not change much. Some jobbers report purchasing coal for $10.50 and others say that they are paying only $9. In fact there is most every price possible from the $3.40 contracts to $12. That the tendency now is downward is the report of shippers generally, but the actual decline is small as yet.

Adjustment of prices by outside authority is becoming harder each day. Some miners are now getting more than the union scale of wages, but this will be changed when an adequate car supply reduces coal prices so that these wages can no longer be maintained.

Anthracite—The supply has diminished materially by reason of local strikes. As a consequence the Lake shipments and city trade have suffered. The Philadelphia & Reading company, which has been rebuilding its trestle has now taken tonnage and will enter the regular Lake shipping list again.

There is much complaint from Canadian dealers and consumers about the small tonnage going into that territory.

Shipments by Lake show 94,900 tons loaded for the week, of which 38,900 tons cleared for Chicago, 31,100 tons for Milwaukee, 18,600 tons for Duluth and Superior, 3,300 tons for Manitowoc and 3,000 tons for Houghton.

Coke—The trade is slow because coke is hard to obtain, but jobbers report quite a good demand. Prices still rule at about $20 for 72-hr. Connellsville foundry and $19 for 48-hr. furnace, with some low grade, medium sulphur, at $17.75.

CLEVELAND

Serious Shortage Is Anticipated from Enforcement of Order 10 — Lakes Priority Leaves but Little Coal for Industries and Domestic Trade — Production Increases Slightly—Lake Shipments Improve, Although Far Behind Schedule.

Bituminous—Industrial and domestic users of coal in this district anticipate that shut-downs and suffering during the winter will result from continued enforcement of Order 10. The priority quota ranges from 35 to 60 per cent of the capacity rating of the individual mines. If the car supply at the mines is only sufficient to handle the percentage of rating required for the Lake, then the entire output of the mine for the day is sent to the Northwest.

Considerable coal, which was loaded prior to the issuance of Order 10, is still coming into the city, and when this coal is all received, it is feared the pinch will be felt in earnest. A committee from the Chamber of Commerce has gone to Washington where the issue will be put up to the Interstate Commerce Commission.

Some little improvement in mine operation is reported, but even under the stimulus of priority orders the car supply is preventing mines from operating at more than 65 per cent of capacity in most of Ohio districts. It is reported that not more than 20 per cent of Ohio's output is available for commercial use, the remainder going to the Lakes, public utilities and the railroads.

Pocahontas and Anthracite—Pocahontas trade conditions are growing more acute and retailers are almost at the point of refusing all orders. At present the policy of accepting orders without stipulating either price or time of delivery is being adhered to by all dealers. Anthracite continues in some-

what better supply, since it is not affected by Order 10.

Lake Trade—The objective of 4,000 cars a day for Lake shipment is still far distant, although some improvement has been made. Last week showed an increase of 100,000 tons over the previous period, which was the record for the year. Officials of the Ore & Coal Exchange, who have the movement in charge, hope to ship more than 4,000,000 tons monthly before the Lake season closes Dec. 1. Even with a 4,000,000-ton movement monthly henceforth, it will be impossible to send much more than 22,000,000 of the 30,000,000 tons said to be needed in the Northwest.

In July the movement amounted to 2,760,600 tons compared with 3,804,423 for July, 1919.

Retail prices for egg per net ton delivered in Cleveland are:

Anthracite—Egg and grate, $13.50; chestnut and stove, $13.75.

Pocahontas—Shoveled lump, $11.75 and mine-run, $10.50.

Domestic bituminous — West Virginia splint, $11; No. 8, Pittsburgh, $10.50; Millfield lump, $13.50; and cannel lump, $14.50.

Steam Coal—No. 6 and No. 8 slack, $10.50@$11; No. 6 and No. 8 mine-run, $10.50@$11; and No. 8 ¾-in. lump, $10.50@$11.

MILWAUKEE

Demoralization Rules in the Coal Trade — Stocks Are Exhausted — But Little Eastern Coal and No Illinois Fuel Is in Local Market.

The coal trade in Milwaukee continues in a demoralized condition. Receipts by Lake are not sufficient to cause an accumulation at the yards and anxiety as to the future increases daily. Except for a limited amount of Pocahontas, there is no Eastern soft coal in the market, and the labor complication in Illinois has checked the flow from that region. Milwaukee dealers have been afraid to buy bituminous coal in the East, because of exorbitant prices created by speculative bidding. Some plants have suspended operations and there is no question but that others will follow.

The embargo placed on coal shipments when the Illinois trouble began has been lifted and shipments can now be made from the docks if there is anything to move. The order will not result in bringing any more coal to the city.

Anthracite was advanced 10c. per ton Aug. 1. Egg is now $14.70; stove and chestnut, $14.95; pea, $14.20; buckwheat, $11.50. Pocahontas screened sells for $14.25 and mine-run at $12.25.

An average of $10 per ton is the present price for steam coal. This price also rules for bunker coal for Lake steamers.

Receipts by Lake for four months ended July 31 aggregate 372,400 tons of anthracite and 591,394 tons of soft coal against 396,700 tons of the former and 1,725,966 tons of the latter during the same period last year.

Inland West

UNIONTOWN

Service Orders 10 and 11 Cause Little Shortage — Car Supply Is Best in Months — Prices Are Unchanged — Labor Supply May Soon Be Determining Factor in Output.

Three price levels for as many destinations have resulted from the enforcement of Service Orders 10 and 11 in the Uniontown coal district. The tonnage drawn from the enforced shipments to the Northwest and New England have not been of such proportions as to disturb seriously the local market, and the tidewater peak market has been steadfastly maintained at $13.

The Great Lakes carries a nominal price of $7 while $8 to $8.50 prevails here for New England shipments. Just at present there does not apper to be much of a market for line-coal shipments.

What the exact effect of Service Order 11 will have upon the Uniontown market has not yet definitely developed but it would appear that it may be enforced with a minimum of confusion. Most operators are shipping their New England percentage at one time.

Service Order 10 giving priority to the Northwest has scarcely created a ripple in the market here. There are about 400 cars per week going to the Lakes under that order.

The car supply for this region for both coal and coke on all lines this week was the best for several months, for coke the supply being 53 per cent and coal about 60 per cent.

The labor situation is looming as this region's next major deterring factor in regard to output. Inability of a number of operators to load all of the unexpected number of cars this week brought out rather forcibly the fact that the labor supply is none too adequate.

COLUMBUS

Car Supply Declines Slightly—Prices Are Unchanged—Priority Ruling Aids Lakes, Although Tonnage Is Still Far Short of Requirements — Steam and Dealers' Situation Is Acute.

The good production record of the previous week was not fully maintained and there was a slump in the various fields. A better car supply is anticipated for next week. Little change of consequence has taken place in the market. Priorities which are now in full effect are forcing a larger tonnage to the Lakes. Public utilities are also better supplied. As a consequence, sufficient tonnage of commercial fuel is difficult to obtain.

Crooksville field led production for the past week with an output close to 70 per cent. In the eastern Ohio field the production was still rather low with about 55 per cent reported. Little relief was given commercial users depending on the field for tonnage because of the heavy shipment of railroad fuel.

Public utilities are making numerous applications to the proper authorities to secure supplies for maintaining operations. Railroads are taking from 12 to 15 per cent of the coal produced in Ohio and after utilities are supplied the remainder is moved to the Lakes. Reports from the lower Lake ports show an increase in the tonnage shipped as compared with previous weeks, although Lake tonnage is still woefully short of requirements.

Retail prices are still high with no indication of a drop at the mines. Retailers are spreading small stocks with one and two deliveries. Hocking lump retails around $9.50@$10 and West Virginia grades are about $1 higher on the average. Pocahontas is still scarce and high. Kentucky grades are coming in, and selling at about the same levels as West Virginia splints.

Prices at the mines of the principal coals used in central Ohio are:

Hocking lump	$6.00@$8.50
Hocking mine-run	5.50@ 8.25
Hocking screenings	5.00@ 8.00
Pomeroy lump	6.50@ 9.00
Pomeroy mine-run	6.25@ 8.50
Pomeroy screenings	6.00@ 8.25
West Virginia splints, lump	7.00@ 9.50
West Virginia mine-run	7.00@ 8.75
West Virginia screenings	7.00@ 8.50
Kentucky lump	7.50@ 9.00
Pocahontas lump	7.50@ 9.00

DETROIT

Coal Dealers Here Influence the Railroads To Modify an Order Preventing Reconsignment — Local Committee Is To Supervise Its Operation—Anthracite Supply Still Short.

Bituminous—After a series of conferences with the Detroit Committee on Car Service of the American Railway Association, representatives of the wholesale and retail coal trade in Detroit were successful in bringing about a modification of an order proposed by railroads serving the city to prevent the reconsignment of coal cars in Detroit. A special committee was appointed to prevent abuses of the reconsignment privilege.

In canceling the embargo against reconsignment, which was to have become effective Aug. 5, substantial aid was given in preventing a serious coal shortage as the reconsignment embargo would have made it practically impossible for wholesalers to continue in business.

The restriction to one reconsignment of a coal shipment is reasonable. It will work no great hardship on coal men and will aid in loosening congestion of cars in the railroad yards. One necessity of retaining the reconsignment privilege is due to the fact that a large number of industrial plants and small retail dealers are unable to provide storage for more than one car at a time and thus would be unable to get coal as needed were they dependent altogether on shipments direct from the mines.

The state coal commission recently appointed by Governor Sleeper is planning a general survey to determine the

coal needs of industrial and domestic consumers in Michigan.

Anthracite—Though some of the retail dealers report that a little more anthracite is entering the city, the supply is still short of requirements and affords little opportunity of filling old orders.

ST. LOUIS

Miners in Illinois Fields Slowly Resume Work—Two-Thirds of the Mines Are Working—Prices High and Coal Shortage Is Serious—Car Supply Temporarily Plentiful.

Up to and including Aug. 4 about two-thirds of the mines in the Standard and Mt. Olive fields in Illinois, were working but producing only about three-fourths of their regular tonnage on account of many of their men refusing to go back.

The railroad tonnage is extremely heavy. But little of the coal is moving into East St. Louis or St. Louis on account of outside markets offering prices of $7@$8 a ton for any and all kinds of coal, while the St. Louis market is $3.50@$5.50.

Conditions in the country west of the river are critical. Wheat is still in the field on account of no coal for threshing and many public utilities have had to shut down or go on short time, and others are threatened. Domestic trade is at a standstill. Carterville coal, when obtainable, is $8.50, Mt. Olive $6.50 and Standard $6, with no other fuels on hand and nothing coming in.

MIDWEST REVIEW

Prices Decline Slightly — Miners Are Indifferent and Return to Work Slowly — Car Supply Is Expected To Improve—Industries Need Fuel Badly, Particularly in the Northwest.

Prices on the various grades of coal produced in Illinois and Indiana have fallen off a little as compared with the prices prevailing last week. During the course of the outlaw strike of the day men, prices on any kind of coal produced in the Middle West rose as high as $9 and $10 per ton, f.o.b. mines. This week, however, it is the general opinion that coal will be available from now on in fairly satisfactory quantities and, therefore, prices have eased down to levels prevailing before the strike. It is now possible to buy spot coal at $6 @$7.50 per ton, f.o.b. mines. No differential is made in the price of prepared coal, mine-run or screenings.

Operators are expecting that the car supply for the next week or so will be much improved, as the lull in mining caused by the strike will give the various railroads serving the Middle West territory an opportunity to clean up their terminal yards and send the empties back to the coal-producing districts.

CHICAGO

Market Here Is Disturbed by Operators Who Offer Inferior Coal at Fancy Prices — Anthracite Arrives in Fair Quantities and Smokeless Increases—Splints Are Exported.

The Chicago market during the past week, has been handled pretty roughly. Some of the operators advanced their mine labor before President Wilson's message was given ordering the men back to work, but the majority of operators who did this are men in business on a small scale and usually operating in a coal seam that is not of the best. As a natural result, coal was being offered in Chicago at $9 or $10 per ton, which under normal circumstances, could not readily be sold at any price. Anthracite coal is coming into Chicago in fairly satisfactory quantities. Also, there has been a noticeable increase in shipments of smokeless coal. West Virginia splint is not reaching Chicago as the export demand for a coal that will stand rough handling is so strong that practically all splints are moving to seaboard. Eastern Kentucky coals are passing through Chicago for the Northwest. Chicago wholesalers are undertaking quite an extensive campaign against the reconsignment rules contemplated by the railroads and the Interstate Commerce Commission. On the whole, reconsignment privileges have been abused and the trade would be much better off if reconsignment were curtailed.

CINCINNATI

Coal Men Resent Conditions of Lake Priority, Coal Being Sold at Lower Rates—Coal Advances Slightly—Ohio River Wave Is About To Bring Fuel to the City Here.

A matter that is causing coal men no end of trouble, and one about which they continue to grumble, is the fact that they have to sit back and watch coal going through to the Lakes at priecs that are much lower than had been paid before the Lake priority went into force. Purchasers of coal that is being shipped via the Lakes, are paying $4.50@$5.50 for the fuel.

Shipments to New England began the past week under the same conditions that prevail in the Lake shipments. There was a slight increase in the price of coal on the retail market in Cincinnati during the past week. Youghiogheny nut and slack jumped 25c., $7.75 @$8 a ton delivered. A 25c. increase also was tacked on to bituminous lump, $8.50@$9.25 a ton. Coke was 50c. and $1 higher, $13@$14 a ton.

There is no smokeless coal to be had, and but little anthracite is moving to this market. The first artificial wave of the summer season is expected to bring down quite a large amount of coal for the local trade via the Ohio River. The United States engineers in charge of the river announced that the wave would be created within a few days, in which event coal would shortly be in the harbors here.

South

LOUISVILLE

Uneasiness Is Felt as a Result of Efforts of Department of Justice To Interfere with Business — Demand Is Keen and Prices Are Firm.

Efforts of the Department of Justice to force lower prices by bringing action under the Lever Act against mines operating in eastern Kentucky has caused uneasiness, but no lowering of prices. With agents of the department seizing books and records it is felt that things are going a bit too far.

Five mines in southeastern Kentucky closed late in the week as a result of strike troubles, and others may follow. Most of the strike troubles in Indiana and Illinois seem to have evaporated, and the effect is already seen in cancellation of some orders for certain grades of coal from Kentucky fields.

Additional suits have been filed during the past few days, principally by jobbers and retailers, against operating companies for failure to comply with contracts.

The priority orders have cut down movement to public utilities, who now figure that they can get coal as they need it. This has resulted in stocking having been reduced materially.

Railroads are continuing to take a good deal of coal, with heavy tonnage moving to Lakes and Northwest, while the Southern textile trade is also buying.

Production in Kentucky is controlled by a 50 to 60 per cent car supply at the present time, and without prospects of a very decided improvement.

Spot quotations show eastern Kentucky gas mine-run at $9@9.50 a ton at mine; steam, $8.75@$9. Western Kentucky lump, $2.70@$6.50, with the bulk selling $4@$5; mine-run, $2.30@ $6; bulk selling, $3.50@$4.50; screenings, $1.95@$5.75, with the bulk sales $3@$4.

BIRMINGHAM

General Conditions Show Some Betterment—Gain in Production Is Slow but Steady—Coal Supply Affords No Relief in Spot Market — Demand Continues Strong — No Quotations Are Being Made.

There has been a general improvement in the situation affecting coal production in this district. The output is making steady gains, but there is not yet sufficient coal being mined to take care of contracts and orders previously booked and still allow a surplus for spot market, where the demand is strong. Spot coal is very scarce, offerings coming mostly from wagon mines and small openings which have been developed with the intensified demand.

Retailers of domestic coal are making little progress in stocking for the fall and winter demand. Retail prices are being advanced from 25c. to 50c. per month to absorb the increase carried in mine contracts made in the spring. Current quotations are from $8.50@$11.

Production for the week ended July 24 was reported at 327,989 tons, which represents a satisfactory increase over the previous week.

News From the Coal Fields

Northern Appalachian

NORTHERN PAN HANDLE

Many Old Customers Suffer Due to Diversion of Coal to the Lakes—Also There Is Marked Decrease in Car Supply.

Although called upon to greatly increase its Lake shipments, the northern Pan Handle was one of those regions in West Virginia which was given no additional car supply with which to meet the increased demands made upon it. The result was that in endeavoring to take care of the Lakes, northern Pan Handle mines were forced to abandon every other field and many customers.

A percentage of 35 had been determined upon as the allotment the region must furnish to the Lakes. Nearly all of the commercial coal produced in the Pan Handle of West Virginia was sent to the Lakes. Scarcely any of the product was left over for the markets to which such coal is usually shipped.

Even without having had to supply so large a tonnage to the Lakes, Pan Handle operations would have had difficulty in keeping pace with the demand and of filling contracts, for transportation conditions were much worse than they had been.

In fact during the last half of July there was a marked decrease in loading equipment furnished. It was feared under such conditions that industrial concerns might be forced to cease work because of lack of fuel.

FAIRMONT

Final Week of July Was About Best of Year as Regards Output—Bulk of Production Still Moves East, Notwithstanding Lake Demands—Inland West Shipments Increase.

Mines in northern West Virginia were able to meet to a large extent the additional demands made upon them under the operation of Service Order 10 through a rather marked improvement in the car supply. The final week of July ranked as one of the best periods of the year, from a production standpoint, there being approximately 6,800 cars of coal and coke loaded on the Monongah division of the Baltimore & Ohio during the period.

There was also a pronounced improvement in the car supply on the Monongahela Ry. and on the branch of the Western Maryland operating in the Fairmont region.

The week started with an excellent car supply, the Baltimore & Ohio having 2,000 cars for its mines. Fairly adequate supply was kept through entire week, 942 cars being on hand for Saturday. The Monongahela R.R. ended the week with a total supply of 400 cars.

The quota of Lake shipments allocated to the Fairmont region was 180 cars a day. There was a good response to Lake demands, although the bulk of production in northern West Virginia was still being moved eastward with a prospect that there would be further increases in eastern shipments after Aug. 2, owing to the necessity of taking care of New England shipments.

It was reported that the Cleveland Ore & Coal Exchange had fixed an arbitrary price on Lake shipments and that was objected to by the operators. The Monongahela Ry. served notice that 30 per cent of allotment would be required on its lines in order to meet the requirements of Service Order 10.

With more equipment available during the final week of the month, there was a perceptible increase in shipments to Inland West points. Curtis Bay shipments were holding up fairly well throughout the week.

PITTSBURGH

Car Supplies Increase, but Limit of Production Still Not Reached—Lake Shipments Are Heavy — Operators Protest Discrinination in Car Distribution.

Car supplies at Pittsburgh district coal mines have continued to increase. The limit of mining capacity, as determined by the proportion of full time the miners are willing to work, has not yet been reached, but probably will be in the near future. It is believed the district is approximately up to its allotment on Lake shipments, the order calling for 5,000,000 tons to be shipped in the 50 working days beginning July 26, or at the rate of 2,000 50-ton cars per day.

It is an open question whether the increase in Lake shipments has been equaled by the general increase in car supplies. If not, there is a decrease in coal available for other trade. The market for spot coal does not furnish suggestion that there has been a change in either direction, as it remains on substantially the same basis as for several weeks past, $10@$12 per net ton at mine, according to grade, tonnage, etc.

Up to this writing the steel mills report themselves as well supplied with coal as formerly, but there is little opportunity for the stocking that is regarded as essential at this time of year.

The Pittsburgh Coal Operators' Association has made a formal protest to the Interstate Commerce Commission, the Public Service Commission of Pennsylvania and the railroads individually, calling for an investigation of its charges, that, by reason of improper inducements given to railroad employees, team-truck loading mines are being given more cars than they are entitled to.

Several railroads promptly issued formal denials of the allegations, but official investigations will probably be made. The rejoinder of the Pennsylvania R.R. contained a statement that on Aug. 2 an order was issued that truck-loading mines be given only box and open-top, not self-clearing cars.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL.

	1920 Week	1920 Calendar Year to Date	1919 (a) Week	1919 (a) Calendar Year to Date
July 17b	10,880,000	282,898,000	9,889,000	238,213,000
Daily average	1,813,000	1,678,000	1,648,000	1,413,000
July 24b	10,472,000	293,370,000	9,988,000	248,201,000
Daily average	1,745,000	1,680,000	1,665,000	1,422,000
July 31c	9,357,000	302,727,000	9,943,000	258,144,000
Daily average	1,559,000	1,676,000	1,657,000	1,429,000

ANTHRACITE

	1920 Week	1920 Calendar Year to Date	1919 (a) Week	1919 (a) Calendar Year to Date
July 17	1,790,000	46,931,000	1,795,000	43,693,000
July 24b	1,770,000	488,701,000	1,803,000	45,496,000
July 31c	1,874,000	50,575,000	1,812,000	47,307,000

BEEHIVE COKE

United States Total

Week Ended July 31 1920c	Week Ended July 24 1920b	Week Ended Aug. 2 1919	1920 to Date	1919a to Date
370,000	385,000	389,000	12,386,000	11,202,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision. All figures in net tons.

CONNELLSVILLE

Spot Market Is a Shade Easier—By-product Ovens Work Full Time, but Coke Is Not Put on Market—Merchant Production Is Unchanged.

The spot coke market shows a slightly easier tone in the matter of price, there having been some sales of furnace coke at less than $18, formerly the minimum. At the same time there are reports of furnace coke having brought $19 quite recently, also reports of some prospective buyers being willing to bid almost any price, without getting coke.

The price divergences indicate that operators are picking their trade, preferring to deal with more or less regular customers, rather than simply sell their coke to the highest bidder. For several weeks it has been considered not improbable that coke prices would be made the subject of a public investigation, and some operators have been desirous of keeping their sales a trifle below the maximum prices known to have been paid in the market.

Operations at the byproduct plants are practically full in most cases, but no byproduct coal in the valleys or contiguous territory is being offered in the market, all the production being required for the attendant blast furnaces.

Pig iron production in the United States was at a rate 2½ per cent less in July than in June, but the consumption of coke probably did not decrease, as with higher humidity in July the consumption per ton of pig iron would be greater.

The spot market generally is quotable at $17.75@$18.50 for furnace and at $19@$19.50 for foundry, per net ton at ovens, Connellsville region.

The *Courier* reports production in the Connellsville and Lower Connellsville region, in the week ended July 31, at 172,870 tons, a decrease of 9,275 tons, but practically all the decrease was at furnace ovens, production by merchant ovens being substantially unchanged, at about 75,000 tons.

Middle Appalachian

NEW RIVER AND THE GULF

Both Fields Have Marked Slump in Car Supply—Most of Tonnage Moves to Tide, Some for Navy Use, but Big Volume to New England—Car Supply Must Increase To Save Export and Inland Markets.

The New River and Winding Gulf fields had this in common in that they both suffered from a most marked slump in the car supply during the last week of July, the Virginian being unable to maintain its excellent supply of previous weeks. The Chesapeake & Ohio Ry., however, had even less of a supply for its mines than the Virginian.

Lake shipments from both the Winding Gulf and New River fields were light, but it was considered likely that Service Order 11 would draw heavily on both fields. The greater part of the tonnage produced in both fields was moving to tidewater, some of it being commandeered for Navy use. Prior to the date Service Order 11 became effective, a considerable volume of coal was being shipped to New England.

Mines in the Winding Gulf field were quite materially handicapped in the production of coal during the last week of July. The Virginian Ry. had been affording its mines an 80 per cent supply, but during the last week of the month, the supply was not more than 50 per cent of allotment. Mines dependent upon the Chesapeake & Ohio had about 35 per cent of mine ratings. A total of 85,000 tons a month was the proportion of coal Winding Gulf mines were expected to furnish New England points.

Export shipments from the New River district were more or less curtailed in the last days of July. Mines were unable to work more than half a week owing to the scarcity of cars, and the tonnage of Lake coal required amounted to 2½ per cent. It was expected that export as well as inland shipments must be curtailed unless there were a rather perceptible increase in the car supply.

POCAHONTAS AND TUG RIVER

Mines Get a Full Supply of Cars, but Labor Is Indifferent—Lake Shipments Increase, Also Tonnage to New England—Pocahontas Responds to Order 10 Better Than Some High Volatile Fields.

No scarcity of cars troubled mines on the Norfolk & Western as July drew to an end, but on the other hand a labor shortage did cause loss of output. Mines had practically a full supply of empties. A labor shortage always develops, however, when cars are plentiful.

The only company whose operation has been affected by the propaganda of labor agitators, in either the Pocahontas or Tug River field, is the Van Wert company, although it is understood that a drive is being made in Mercer County. Lake shipments underwent an increase during the week. Also Norfolk & Western producers, at the outset of August, began making larger shipments to New England under the terms of Service Order 11.

In advance of Service Order 11, large tonnages from the Tug River field were being sent to New England as well as to Lake points. The necessity of shipping so much coal to New England was not expected to be conducive to an increase in export shipments although an excellent car supply may overcome such a handicap.

Production in the Pocahontas region continued to move upward in the last working period of July, largely because of adequate transportation facilities. The Pocahontas region was able to take care of its allocation of tonnage for the Lakes—7 per cent—better than some of the high-volatile fields further north owing to the full car supply; although the red tape and lack of knowledge at first as to what was required created some confusion as did also the New England priority order.

KANAWHA

Lake Requirements Take One-Third of Kanawha Output—Only a Limited Tonnage Goes to Contract Customers—

To meet Lake requirements it took just about a third of the entire Kanawha output (15 per cent) and in some cases more than that proportion. There were a less number of cars in the field than during the previous week.

Mines on the Kanawha & Michigan were under orders to send 30 per cent of the allotment to the Lakes. As they were only furnished 50 per cent or less of their mine rating, it will be patent that most of the coal originating on this road was being sent to the Lakes.

With cars so scarce it was impossible to take care of the retail demand and of the industrial trade. In fact what with railroad-fuel shipments, public-utility requirements and the Lake order, only a limited tonnage was available for shipments to contract customers.

No opportunity was afforded Kanawha mines to take advantage of the larger run of cars on Monday to ship to tidewater for export, since there was an embargo in effect on that date. Hence export shipments are believed to have been materially reduced during the week.

VIRGINIA

Coal and Coke Output Increase in Virginia Fields—Demand Is Heavy with but Little Free Coal Available.

Although there was not quite as good a car supply in the Virginia fields during the last days of July as there had been during the previous week, nevertheless mines were able to forge ahead a little, gaining about 4 per cent in production, owing to the fact that during the period mentioned all labor-shortage losses were eliminated.

There was shipped a total of 146,000 tons or nearly 78 per cent of potential capacity. In the same period there was produced and converted into coke a total of 34,000 tons, that being 6,000 tons more than during the previous week.

As a result of a conference of coal men held at Lynchburg, Va. on July 29, the shortage of fuel was confined to a few isolated cases. At this meeting an appeal was made to the citizens of Virginia to practice economy in the use of fuel.

There was during the closing days of July and at the beginning of August a heavy demand for Virginia coal and but little fuel was being exported, as a result of embargoes. Virginia mines expected to be in a position to take care of domestic needs as well as of New England requirements. Little or no free coal was available as a result of the priority orders and of contract requirements.

LOGAN AND THACKER

Lakes Absorb a Large Part of Output of the Fields—Car Shortage Exists in Logan, and Strikes Limit Output in Thacker Field.

Since the Lakes required so large a part of the output, comparatively little commercial coal was available in the last week of July in the Logan and Thacker fields. In one field there was a car shortage, while in the other production was limited by a strike; in consequence it was impossible to keep up with contract requirements in either region.

Service Order 10 worked a hardship in the Guyan region because of the limited supply of empties. The proportion of loads for the Lakes from the field was only 15 per cent, but since there was not more than a 50 per cent car supply other customers were deprived of their regular supply.

Tidewater was under embargo on July 26 and consequently it was impossible to make export shipments on the only day of the week when the car supply would have permitted it. As a result of Service Order 10, there was a livelier demand than ever for export coal with prices as high as $15 a ton being offered in some instances.

While idleness in the Thacker field was still general owing to the strike, there was nevertheless an increase in production in that field during the last week of July, as compared with previous periods, owing to several mines long in idleness resuming operations.

ASHLAND

An Accident on C. & O. Reduces Output in Eastern Kentucky—Shipments to Tide Increase, Presumably for Export.

Eastern Kentucky mines fell behind their production of the previous week, in the period ended July 31, because of an accident on July 30 on the Chesapeake & Ohio, forcing a suspension of traffic. But for the accident it is estimated that there would probably have been a 10 per cent increase in production. As it was mines succeeded in producing only 149,805 tons, or 43 per cent of possible capacity.

There was a rapid increase in tidewater shipments in the eastern Kentucky field during the last week of the month, notwithstanding the necessity of taking care of Lake requirements at the same time. Tidewater shipments were fully three times as large as they were for the week ended July 24, presumably for export.

Exports having been cut off from other fields, owing to various transportation and distribution orders in effect, it had become necessary for buyers to move further westward to secure coal for such a purpose, from a field which, until about the middle of July, had been giving little attention to the export trade.

The demand for all grades and kinds of coal in the eastern Kentucky field was stiff, that being particularly true as to coal for export, though gas coal also was in strong demand. Export coal was commanding fancy prices during the past week.

FRANKFORT

State Workmen's Compensation Board Refuses Request of Liability Companies for Increase in Rate.

The request for an increase in the basis rate of compensation on insurance for coal-mine employees, submitted recently by the liability insurance companies to the State Workmen's Compensation Board, was refused by the board. The request asked that the rate be changed from $3.65 to $3.79.

The insurance companies stated that an increase was made necessary by the new law which increases the maximum for medical attention from $100 to $200 and the maximum weekly payments from $12 to $15. They also noted that the average wage, on which compensation is based, is higher, but the board holds that premiums as well as compensation are based on the pay roll.

Middle Western

INDIANAPOLIS

Indiana Coal Commission Considers Coal Prices—Schedule Is Obtained for Estimating Present Fuel Prices—Governmental Agency May Have To Stabilize Coal Industry.

Coal prices effective during the period of wartime control by the Federal Fuel Administration are under consideration by the Indiana Coal Commission, the result of legislation by the recent special session of the state Legislature, as a possible basis for prices under the forms of the new state regulatory law. Since the cessation of Federal control, miners have received several wage increases. By adding these to the old Federal prices a fairly accurate schedule may be obtained for application at this time.

The Federal prices for Indiana lump coal on cars at the mines was $2.65 a ton and for screenings, $2.15 a ton. It has been estimated that the additional wages now paid to miners and day workers would not add more than 15c. a ton, even under subnormal production conditions. If this estimate is approximately correct, it is said the present price of lump coal at the mines should not exceed $3.40 a ton.

Reports received by the Public Service Commission from a number of public utilities indicate that they can not purchase coal at the mines for twice $3.40 a ton. Several reported that they are forced to purchase at from $7 to $8 a ton, which with the freight added brings the total cost to more than $10.

E. I. Lewis, chairman of the public service commission, reiterated his belief that the commission is virtually powerless to deal effectively with the utilities and the public until the coal industry is stabilized through Governmental agency.

OHIO

Year 1919 Is Worst in History of Coal Industry in Ohio—Large Number of Employees Are Killed by Falls of Top.

The fiscal year ended June 30 was one of the worst in the coal industry in Ohio, according to a recent report made public by Jerome Watson, chief deputy and safety commissioner of mines of the state. Two causes are mentioned for this condition—car shortage and serious labor conditions, which prevailed in many mining areas.

The coal production in 1919 for the calendar was 34,000,000 tons which is considered a fair record (outside of war times), as the largest production previous to the war was in 1913 with 36,285,468 tons. Reports for the first six months of the year show a heavy falling off from those of previous years, which causes Mr. Watson to believe that the shortage will be most marked.

During the year there were 147 fatal accidents connected with coal mining, of which number 76 were killed by falling roofs. The number of accidents in proportion to tonnage produced was larger than in any previous year. Jefferson County alone had 41 fatal accidents, of which 20 resulted from the mine disaster at Amsterdam, Oct. 29, 1919.

Of the fatalities 18 were killed by mine cars, 13 by explosives, three by motors, four by electricity, two by mining machines, one by gas explosion and two on the surface by railroads.

Under present conditions operators and jobbers refuse to enter into new contract agreements. Some operators are looking into the future and are filling their contracts. Of the utilities reporting that they hold contracts, two-thirds declare that the contractors are meeting their demands. There is a growing fear that the Indiana coal regulatory act will not protect domestic consumers.

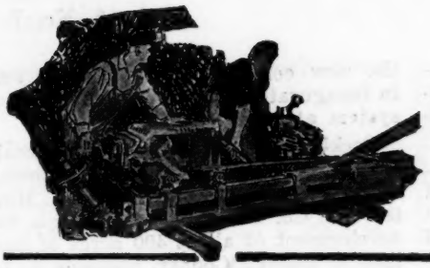
Canada

NORTHERN BRITISH COLUMBIA

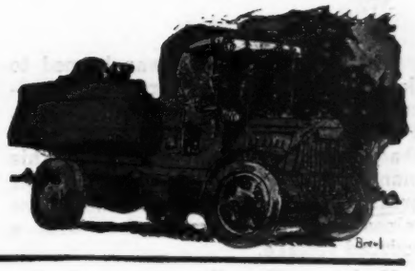
Copper River Coal Field Is Attracting Attention—Two Good Coal Seams.

Extensive coal deposits situated in the Copper River district of Northern British Columbia are being inspected by engineers and representatives of Canadian financial interests with a view to their development. This field is located on Chettleburgh Creek, a tributary of the Zymoetz River, about 30 miles from the town of Smithers.

There are 75 leases on which two good seams of coal have been exposed, respectively nine and six feet thick. The latter seam has been slightly developed by short prospect tunnels. A lot of exploratory work has been done and the measures are exposed on Chettleburgh Creek for a distance of two miles.



Mine and Company News



ILLINOIS

Edwardsville—The Donk Bros. Coal & Coke Co., of St. Louis, is about completing its No. 4 mine near this place; the mine has been under construction for over a year. The plant is said to be one of the most modern and up-to-date collieries in the country and will hoist between 6,000 and 8,000 tons daily when in full operation. The steel construction work was done under the supervision of the Allen & Garcia Construction Co., of Chicago, the same company which completed the large Union Colliery Co. mine at Dowell, near Duquoin. The Donk Bros. mine will employ in the neighborhood of 900 men and cost over $1,000,000.

Marion—The Madison Coal Corporation is sinking a new shaft near Blairsville (northwest of here), in Williamson County, the work of putting in a switch form the Illinois Central to the location of the shaft having been almost completed. When the track is finished, material will be placed and sinking pushed. This mine is to be one of the most modern in this field, and the entire operation will be electrically equipped. Plans call for the erection of 25 dwellings at present for housing employees, and 75 later on.

West Frankfort—The Old Ben Coal Corporation, which owns and operates eight mines in Franklin County, is installing its own private telephone system between the different operations. This work has been hastened somewhat on account of the telephone operators and linemen having been on strike in this county for four weeks, thus cutting the company off from all communication with its different mines.

Zeigler—The Bell & Zoller Mining Co., operating two big mines in Franklin County, has inaugurated a new system of handling its compensation cases. All claims will be adjusted through the insurance company, and the person injured will receive his compensation weekly. The company believes the change will be of great assistance to the miners.

The new material shaft of mine No. 2 of this company, has reached coal. This shaft was made necessary in order to increase the coal output of this mine, as much time was lost lowering material and hoisting other than coal at the hoisting shaft. This material shaft will be independent of the main and the air shafts, as a separate power plant and tipple has been erected for it. This company has a record for steady running, and probably averages as great a number of running days as any mine in this field.

KENTUCKY

Louisville—The Kentucky Collieries Co. at Pineville was recently incorporated with a capital stock of $300,000 by T. C. Hughes, Joseph Stewart and James M. Stewart.

Seco—The South-East Coal Co. is planning for the development of about 3,000 acres of coal land in the vicinity of this place—a property recently acquired. The company proposes to install a plant with a daily output of about 2,000 tons. W. B. Goldsmith is consulting engineer for the project. The company was recently organized with A. D. W. Smith as president.

NEW YORK

New York—The Estate of W. J. Rainey announce that the business heretofore carried on under the name of W. J. Rainey has been incorporated and hereafter will be conducted as W. J. Rainey, Inc. The officers of the new corporation are: Roy A. Rainey, chairman of the board; Scott Stewart, president and treasurer; L. L. Willard, vice president in charge of operations; John McElwain, vice president in charge of sales and purchases of raw materials; H. R. Ahrens, secretary. The executive offices of the company will remain at 52 Vanderbilt Avenue, New York, N. Y.

NORTH DAKOTA

New Salem—The Consolidated Lignite Collieries of this place, has placed a contract with the Roberts & Schaefer Co. for construction of its new coal mining plant at New Salem. It is said that this plant, when completed, will be one of the finest in the State of North Dakota and will be built in connection with the new briquetting plant which is contemplated at this place.

OHIO

Nelsonville—The Ohio Consolidated Coal Co., has recently purchased four mines in the Nelsonville district which give this company a daily capacity of about 1,200 tons. The Ohio Consolidated Coal Co., has offices in the Columbus Savings & Trust Bldg., Columbus. S. E. Ranney is president and R. C. Kyle, secretary and general manager. The largest purchase was that of the Majestic Coal Co., on the Hocking Valley Ry. with two operating mines served with one tipple. This has a capacity of about 800 tons daily which will soon be increased. The company also purchased the Cambrai-Hocking Coal Co., mine with a capacity of 300 tons daily and also the mine of Bruce Bros., on the Carbon Hill branch of the H. V. Ry.

Rendville—Monsarrat Bros., operators of Columbus, are preparing to open a large mine at this place, located on the Toledo & Ohio Central Ry. The mine will have an initial capacity of 400 tons which will gradually be increased. It is being equipped with modern machinery electrically operated. It will be ready for operation in about six weeks, at which time the company will have three mines in this territory.

PENNSYLVANIA

Cramer—The Imperial Coal Corporation, at Charles, Indiana County, near here, has completed a new coal tipple, the work being done by the Heyl-Patterson Construction Co. of Pittsburgh, Pa., at a cost of $70,000. It is of steel and has rotary picking tables, with both electricity and compressed air for power. The tipple has large capacity. The Imperial Coal Co. owns 3,000 acres of coal land which has been barely touched. A new shaft is soon to be sunk on the Wakefield farm, opposite Seward in Indiana County.

Scottdale—According to present plans the big new steam shovel installed by the H. C. Frick Coke Co., to strip coal near Masontown, will start operation soon. The shovel has a capacity of six cu.yd. and weighs 312 tons. There has been a little delay in getting the machinery installed but everything is now practically ready for work. As soon as a sufficient quantity of coal is uncovered a smaller shovel to be used for the actual coal digging will be started. The coal will be loaded on small mine cars and hauled to Ronco to be shipped by river to Duquesne and other down river points. The work will be under the direction of W. J. Charleton, superintendent of the Leckrone and Ronco mines.

Masontown—The tipple, boiler house and engine house were recently destroyed by fire at the Crystal mine of the Hillman Coal & Coke Co., of Pittsburgh, Pa. A temporary tipple is being constructed and it is expected that operations will be resumed shortly.

Hazleton—A serious accident took place at the power plant of the Harwood Electric Co. near this place. While filling one of the oil switches, there was a surge on the line which set the oil on fire and caused an explosion, scattering the oil all over the switch board. A damage resulted to the power house of about $200,000 from the burning oil and the water used by the firemen to extinguish the flames. The

switch board attendant was burned to death and the switchboard ruined, resulting in the closing down of the plant. For about three days all of the mines that depended upon power from this plant were not able to work. Other arrangements were made and these mines are now operating but with a reduced voltage.

Hazleton—The Campion Coal Co., operating the new washery at Silver Brook, south of here, recently began shipments. The plant has a capacity of 500 tons per day, and is said to have cost approximately $50,000. The company includes Slattery Brothers, whose coal office is in the Stephen Girard Building, Philadelphia, and P. J. Campion and Thomas F. Leahy, both of Mahanoy City, Pa.

Wilkes-Barre—The Haddock Mining Co. and its subsidiary, the Haddock Supply Co., have insured all of their employees for $500 each in one of the large life insurance companies. This blanket insurance, which was entirely unsolicited, gives each employee the benefit of the insurance company's nursing service. Among other benefits, it is provided that any insured employee of the company who, before the age of 60, becomes permanently incapacitated through disease or accident, shall six months after receipt of proof, receive payment under any one of five options until the entire $500 has been paid. The G. B. Markle Co. and the John Conlon Coal Co. are other Luzerne County anthracite operators who have insured their employees in this manner.

WASHINGTON

Spiketon—The Pierce County Coal Co. is preparing plans for a new incline skip hoist, tipple screens and a crusher in unit No. 1; shaking screens and washers in unit No. 2, and team bunkers in unit No. 3. The last-named plant is to be designed to permit of the mixing of different sizes or grades of coal as loaded. All units are to be connected by conveyors, and the plans are to be completed by about Aug. 20. G. H. Sharpe is the general manager.

WEST VIRGINIA

Glen White—The E. E. White Coal Co. has acquired additional coal property totaling about 5,000 acres in Raleigh and Wyoming counties, and is planning for extensive development; the company expects to install a new plant of about 3,000 ton capacity. E. E. White is president and manager.

Huntington—Fully a million dollars will be involved in the development of the properties of the Merrill Coal Co., in the Guyan field on Little Buffalo Creek. Construction work on the plant and development work in the mines has begun. In connection with the opening of the new mine it will be necessary to build three miles of railroad at a cost of $300,000, construction work on which has already started. The plant and mines of the company will be at Henlawson, a new town shortly to be established. The Merrill company will provide its own locomotives and also additional rolling stock.

Kingwood—The Barnard Coal Co., recently incorporated with a capital of $75,000, has begun work on its tract of 400 acres of Upper Freeport coal near here in Preston County. Machinery for mining and general operation will be installed at an early date, and it is proposed to arrange for an output of close to 600 tons per day. The incorporators are: W. O. Barnard, P. P. Reiner, and S. R. Barnard, all of Morgantown, W. Va.; O. T. Barnard of Richard, W. Va., and C. W. Craig of Kingwood, W. Va. W. O. Barnard is president and general manager, and C. W. Craig is secretary and treasurer of this new concern.

Nelsonville—A consolidation of the mines of the Northern Mining & Fuel Co., and the Southern Fuel Co., both located near Nelsonville, has been effected under a new corporation known as the Northern & Southern Coal Co., chartered with a capital of $500,000. The incorporators are: D. N. Postlewaite, J. N. Bricker, R. Martin, H. H. Orr and R. Hads. The two mines have been in operation with a combined capacity of 2,200 tons daily. Offices will be opened at Nelsonville with C. C. Sharp in charge as president and general manager.

Bluefield—Arbitrators in the claim of Mrs. Ollie H. Browning against the Big Vein Pocahontas Coal Co., for unpaid royalties, have awarded the claimant $132,000 representing royalty on 1,250,000 tons of coal. The arbitrators were George Wolfe, a well known operator of the Winding Gulf field, W. R. Graham and N. H. Manakee, mining engineers.

Mrs. Browning originally leased her coal land to a Pennsylvania man at a royalty of 15c. a ton. However the minimum royalty was fixed at $45,000 a year, it being provided that the royalty was to be paid at that rate until the royalties paid represented the coal available, whether it was mined or not. The Big Vein Company purchased the lease and about three years ago ceased making payments covering royalties on the ground that the amount paid had been sufficient to cover all the coal on the property.

Huntington—The organization of a company of large resources, for the purpose of establishing a system of river transportation for fuel between Pittsburgh and New Orleans, is beginning to assume tangible form. Large concerns in Cincinnati, Memphis, and other river cities are behind the move to establish a river coal-carrying line.

The necessity for such a line is quite urgent, it is claimed, owing to the difficulty and delay in moving coal and other freight and to the imminence of an advance in freight rates which will make fuel and steel from Ohio, Pennsylvania and West Virginia almost prohibitive in price for certain markets.

According to present plans it is proposed to complete the organization of the new company without delay and to inaugurate the water transportation system at once.

Beckley—Organized with a capitalization of $150,000, by E. C. Minter, A. K. Minter and others, the C. E. Minter Coal Co. will immediately begin the development of about 400 acres of coal land in Raleigh County, planning to be in a position to mine coal on a commercial scale by the middle of December. Headquarters of the company will be at Besoco, W. Va. The new company's holdings include both the Pocahontas and the Fire Creek seams. E. C. Minter is the president and general manager of the company and A. K. Minter has been placed in charge of construction work on the new plant. The mines of the company will be adjacent to both the Chesapeake & Ohio and the Virginian railroads. In addition to heading the new company, President Minter occupies the same position with reference to the Beckley Smokeless Coal Co., the Clyde Pocahontas Coal Co., the Stone Coal Land Co. and the Raleigh Smokeless Fuel Co. He is also vice president, general manager and treasurer of the Meadow River Smokeless Coal Co.

ALBERTA, CANADA

Blairmore—The West Canadian Collieries Co., Ltd., of Blairmore, Alberta, Canada, has placed a contract with the Roberts & Schaefer Co. at Chicago, Ill., for the reconstruction of its Bellevue and Greenhill tipples. Rotary dumps and modern machinery to better the output and preparation of its coal will be installed.

NOVA SCOTIA

Halifax—The Inverness Railway & Collieries, Ltd., has been organized, mainly through the efforts of M. E. C. Henderson, president of the H. D. MacKenzie Co., of Halifax. The company has acquired an extensive coal area and 62 miles of railway running from Point Tupper to Inverness with shipping docks at Port Hastings. The coal deposits will be actively developed by the new company. H. C. Bigelow, freight agent (at Halifax) of the Canadian National Ry., will manage the railway department of the company.

VANCOUVER ISLAND

Nanoose — The Wellington-Nanoose Collieries, Ltd., operating the Nanoose Bay mine, has been completely reorganized and the mine henceforth will be known as the Lantzville mine. Louis Williams is the chairman of the board of directors; F. H. Lantz, the managing director, and J. A. Coleman, the secretary. Over $100,000 has been spent during the past year in improvements to the surface equipment. New wharves have been built, a Link Belt screening plant installed, and a washery (capable of handling 500 tons a day) erected. Edward Floyd, an English mining engineer with experience in the coalfields of Northumberland, has been appointed superintendent.

Industrial News

Chicago, Ill.—Announcement that plans were in contemplation under which employees of the Federal Electric Co. would have a voice in the management of the company, was made by John F. Gilchrist, president, in an address delivered on June 26 at a housewarming at the concern's new plant, 87th and State Sts., Chicago. The plan offered will be in conformity with some of the new ideas of employees' representation. Mr. Gilchrist told the employees that they could purchase stock in the company at almost any terms convenient to themselves and said he was pleased to observe that approximately 40 per cent of the employees were already stockholders. More than 1000 persons were guests at the housewarming which was celebrated by dancing, baseball games, field events, vaudeville, aeroplane ascensions and a luncheon.

New York, N. Y.—The Chicago Pneumatic Tool Co. announces that bulletin 504, recently issued by the company, describing the slugger rock drill, is now available, upon request, from its New York office or branches. On Aug. 1, the Publicity Department will be located in the Chicago Pneumatic Building, 6 East 44th St., New York, where all communications should be addressed after this date. H. W. Clarke is the manager of the Publicity Department.

The Worthington Pump & Machinery Corporation, 115 Broadway, New York, announces the purchase from the Platt Iron Works, of Dayton, Ohio, of their drawings, patterns, jigs, templates, special tools, goodwill and name, on their following lines of product: (1) Oil mill machinery, suitable for the extraction of oil from all sorts of nut and seed products, comprising crushers, cookers, cake formers, presses, filters and pumps. (2) Hydraulic turbine and water wheel line, covering their entire line of hydraulic turbines and water wheels, horizontal and vertical, high and low head. (3) Feed water heaters, steel and cast iron horizontal and vertical. (4) High pressure air compressors for torpedo and other high pressure charging, cleaning and discharging.

Seattle, Wash.—The Electric Storage Battery Co., of Philadelphia, announces the appointment of George D. Luther as Soliciting Agent in Seattle with offices at 811 White Building. Mr. Luther joined the sales force of the Boston office of The Electric Storage Battery Co. in 1907. In 1910 he was made Soliciting Agent in Denver in which capacity he served until his recent appointment. The Electric Storage Battery Co. has specialized in the manufacture of storage batteries for over 32 years.

Huntington, W. Va.—The office and warehouse of the Sullivan Machinery Co., at this place, is now located at 736 Third Ave., instead of at 841 Court St. as heretofore. A large supply of spare parts and equipment for Sullivan ironclad coal cutters, hammer drills, etc., is carried in stock.

Brooklyn, N. Y.—After a most comprehensive and exhaustive series of experiments and tests, physically, chemically and under conditions of service of great severity, the Underwriters' Laboratories have officially approved "Resistal" goggles manufactured by Strauss & Buegeleisen of this place. The tests made included all those prescribed by the tentative code of the U. S. Bureau of Standards. The regular Underwriters' Laboratories inspection service is being carried on at the Strauss & Buegeleisen factory by a resident representative of the board, who inspects the progress of manufacture, the materials used and the finished "Resistal" goggles. Every goggle which passes this inspection is given the Underwriters' Label.

Chicago, Ill.—The Mikesell Brothers Co. has recently acquired by purchase the asbestos and rubber factory, located at Wabash, Indiana, formerly belonging to the Perfection Tire & Rubber Co. This is the only asbestos textile plant located west of Philadelphia and consists of 130,000 sq.ft. of floor space, and in addition 34 acres of land available for expansion purposes. The company's brattice cloth factory will be located at that point the latter part of this year, and the concern will specialize in the following material, used in and around coal mines: Brattice cloth waterproof duck; pipe covering and asbestos cements; asbestos and rubber packings; gaskets and pump valves; insulating tapes.

Lorain, Ohio—The Thew Shovel Co., an Ohio corporation, has acquired all the outstanding capital stock of the Thew Automatic Shovel Co., of Lorain, and the two companies have been consolidated. The Thew Shovel Co. has assumed all the assets and business of the Thew Automatic Shovel Co., together with the legal liabilities and obligations. The officers of the Thew Shovel Co. are: President, F. A. Smythe; vice president, H. H. Harris; vice president, A. B. Taylor; secretary, G. B. Smythe; treasurer, R. B. Miller; sales manager, H. E. Billington; general works manager, J. S. Small, and purchasing agent, H. B. Newton. The consolidation gives the Thew Shovel Co. net assets of $2,000,000, and it is planned to increase the productive capacity of the company 100 per cent during 1920. New buildings have been completed and others are under construction.

Pittsburgh, Pa.—Announcement is made of approvals recently granted by the Bureau of Mines as follows: Approval 105 covers a 210-volt direct current shortwall mining machine with a 50-h.p. explosion-proof motor and an explosion-proof cable reel for use in gaseous mines. Approval 105-A covers a 500-volt equipment of the same type. These equipments are manufactured by the Goodman Manufacturing Co., of Chicago, Ill.

Approval 1,200 covers a single-shot blasting unit which is manufactured by the Mine Safety Appliances Co., of Pittsburgh, Pa. This unit has the same type of battery as is used in the Edison approved cap lamp. In the approved design the cover or attachment can be used for only shot-firing service. Combination units designed for both illumination and shot-firing purposes are not admitted to the Bureau's approval list.

Indianapolis, Ind.—The shipment of two 2,800 h.p. Parsons steam turbines by the Midwest Engine Co., of Indianapolis, to the Asano Ship Building Co., at Yokahoma, Japan, is announced as a part of an order for a number of these turbines from the same company. The units are designed for twin-screw propellers running in port and starboard directions. A steam engine of an equivalent horsepower would weigh about 165 tons, thus indicating the great gain in cargo space by use of this turbine which weighs about 16 tons. According to the Midwest company, these units now going to Japan were built from blue prints, tested and shipped within less than the 90-day period specified by the purchaser. In addition to its steam-turbine activities, the Midwest company is in production on a gas engine designed especially for heavy-duty trucks and tractors, and is also pushing its facilities to take care of the steadily increasing demand for the Midwest utilitor—a small tractor unit.

Hazleton, Pa.—Barrett-Haentjens & Co., of this place, recently accepted an order from the Delaware, Lackawanna & Western Coal Department, of the anthracite field, for a ten-stage centrifugal pump. The capacity of this machine will be 850 gal. per min. and the lift 920 ft. It will be driven by a 300 h.p. motor. This firm of pump builders is also making a single-stage, wood-lined pump to be used for handling jig water at the Leggitts Creek Colliery. This is believed to be the first attempt ever made to wood-line a pump of the centrifugal type.

Personals

George T. Robinson, president of the Operators' Coal Co., and general manager of the Citizens' Coal Co., Johnstown, Pa., has been elected president of the Chamber of Commerce of Johnstown. Mr. Robinson formerly was general superintendent of the Mining Department of the Cambria Steel Co.

C. E. Jaycox, formerly in the Traffic Department of the Rutledge & Taylor Coal Co., Chicago, has been made traffic manager for the Lake & Export Coal Co. **W. A. Field**, formerly of the Johnstown City Coal Co., has become credit manager for the same concern.

Fred B. Spence, formerly with the Big Muddy Coal & Iron Co., of Murphysboro, Ill., has become connected with the Illinois Koalin Co., as assistant secretary and treasurer, with offices in Anna, Ill.

At the recent commencement of the University of Pittsburgh, the honorary degree of Doctor of Science was conferred upon **Professor H. H. Stoek**, head of the Department of Mining Engineering, University of Illinois.

Robert M. Medill, of Harrisburg, Ill., formerly of Springfield, Ill., has assumed his duties as Director of Mines & Minerals, of the state of Illinois, filling the vacancy caused by the death of Joseph C. Thompson, of Benton. The appointment has been announced by Governor Lowden. Mr. Medill is a son of Duncan B. Medill, a former resident of Springfield, who is now superintendent of the J. K. Deering & Co. coal properties with headquarters at Clinton, Ind. The new director has been general superintendent of the O'Gara Coal Co., at Harrisburg, Ill., for a number of years.

W. D. Lee has been appointed a member of the mine-inspection force of West Virginia, succeeding inspector Edward Nicholson who has resigned to accept a position in Illinois. Mr. Lee will be a District Mine Inspector for district 18 and will have his headquarters at Iaeger, McDowell County. He succeeds Inspector Quenon who was transferred to district 12 at Thurmond.

Edward Nicholson, regarded as one of the most efficient members of the inspection force of the West Virginia Department of Mines, has resigned that position to become the general superintendent of the Franklin Coal & Coke Co., of Illinois. Mr. Nicholson was appointed a district mine inspector on April 15, 1919, being at that time superintendent of the Boone County Coal & Coke Co. He is a native of Sunderland, England.

Harry C. Owen has been selected as assistant manager of the Morgantown Coal Co. He will have entire charge of the fuel purchases of the company. Mr. Owen during the war served as assistant district representative of the U. S. Fuel Administration having his headquarters at Fairmont. When he left there it was to become the secretary of the Pittsburgh Wholesale Coal Association. About a year ago he became associated with the Bertha Coal Co.

Humphrey D. Smith, formerly of Bluefield, W. Va., and until recently general superintendent of Upland and Crozer mines at Elkhorn,, McDowell County, W. Va., has accepted the position of general superintendent of the American Coal Co.'s works at Pinnacle, Piedmont and Crane Creek, Mercer County, W. Va.

R. A. Ruff, chief engineer at Crozer, will succeed Mr. Smith, and **Robert Knowlin** will succeed Mr. Ruff.

J. S. Hammond has been appointed assistant mine inspector in the Ashland, Ky., district by Governor Morrow, according to an official announcement.

George W. Bowman and **S. H. Brown**, of Palisades, Col., have purchased a controlling interest in the Garfield Coal Mining Co. from George Smith. Equipment costing $25,000 will be installed at once

F. L. Poindexter has been appointed assistant general superintendent of the Chesapeake & Ohio Ry., having been heretofore assistant to the general superintendent. Mr. Poindexter will have under his direction, coal-car allotment, company fuel and distribution. **F. J. Ginn**, who was chairman of the C. & O. Allotment Commission has been transferred to the staff of the general superintendent as superintendent in charge of agencies.

George B. McCormack, president of the Pratt Consolidated Coal Co. and a prominent local capitalist, has tendered his resignation as president of the Alabama Coal Operators' Association, which organization he has headed for the past several years. His successor has not yet been elected.

M. C. Leighton and **Major C. T. Chenery**, members of the American Society of Civil Engineers, and **A. C. Oliphant**, associate member of the American Society of Mechanical Engineers and the American Institute of Electrical Engineers, have formed a co-partnership under the name of M. O. Leighton & Co. with offices at 700 Tenth Street, Washington, D. C., for the purpose of engaging in general engineering practice and industrial representation before the Federal departments. Mr. Leighton and Major Chenery will continue for the time being as chairman and secretary, respectively, of the National Public Works Department Association, while Mr. Leighton and Mr. Oliphant will continue service in the Washington office of Engineering Council pending the displacement of that body by the Federated American Engineering Societies.

Harry C. McDivitt, superintendent of the Atlantic Crushed Coke Co.'s big plant near New Derry, Westmoreland County, Pa., for the past eight or nine years, has resigned his position, and has been succeeded by **S. R. Kelly**, formerly with the Connellsville Coke & Fuel Co., at Ligonier.

John A. Bell, of Carnegie, Pa., has purchased the interest of Cyrus Ferguson in the Cedar Grove mine of the Verner Coal Co., located near Avella, for $600,000. The Cedar Grove mine had an output during the past year of 1,400 tons of coal a day.

Association Activities

Kentucky Retail Coal Dealers' Association

One hundred retail-coal dealers of the state formed the Kentucky Retail Coal Dealers' Association at Lexington, Ky., recently, electing the following officers: W. S. Glore, Danville, president; Shelby Kinkead, Lexington, vice president; C. P. Willoughby, Richmond, treasurer; J. Crow Taylor, Louisville, secretary. A meeting will be held August 10, at which plans for increasing the membership, especially in the western part of the state, will be taken up.

Central Pennsylvania Coal Producers' Association

Alleging a cash loss of $35,000 and the loss of many miners in the district during the month of May as a result of the car shortage at the mines served by the Pennsylvania R. R., the Pennsylvania Coal & Coke Corporation, T. H. Watkins, of New York, president, has filed a bill in equity in the Cambria County, Pa., courts against the Pennsylvania R. R. for an injunction restraining the railroad company from giving one mine more than its share of cars, the share being based on its mine rating.

Announcement of the suit was made by the Central Pennsylvania Coal Producers' Association, of which the company is a member. The action is brought under the provisions of the Esch-Cummins bill. Solicitors retained are Butler, Lamb, Foster and Pope, of Chicago, Rose and Eichenauer, of Pittsburgh, and John E. Evans and P. J. Little, of Ebensburg, Pa.

Northern West Virginia Operators' Association

According to information given out by officers of the Northern West Virginia Operators' Association, the decision by Judge J. C. Pritchard in the United States Circuit Court of Appeals at Asheville, N. C., on July 19, was not a final decision, but merely suspended the injunction granted by Judge Dayton of the lower court restraining the Baltimore & Ohio from assigning cars, pending a final decision in the case.

Announcement made by the operators' association was merely to correct a report that the assigned-car case had been lost in the Appeal Court. The suspension order had to do with the suit of the Lambert Run Coal Co. instituted to put a stop to the assignment of cars by the Baltimore & Ohio in northern West Virginia.

Wheeling Motor Coal Association

Members of the Wheeling Motor Coal Association have indicated that as a protest against the action of the council of the city of Wheeling, in fixing an impossible speed limit over the streets of Wheeling, they may cease operating their trucks for a month, that being the decision tentatively reached, it is said, at a meeting held on July 21.

It appears that the council adopted an ordinance prescribing that heavy trucks should not be allowed to run at a speed greater than five miles an hour, except where provided with pneumatic tires, and in that event they would be permitted to move at a speed of eight miles an hour. Such an ordinance was characterized as ridiculous because the trucks could not be equipped with pneumatic tires and also because the trucks could not be reduced to a speed of five miles an hour.

The motor-truck people believe that the ordinance regulating the speed of trucks was evidently passed by council in the belief that it would be easy to dispense with the service of such trucks in supplying coal to Wheeling industries. Hence there was a feeling that if no trucks were operated for four weeks it would perhaps demonstrate just how dependent industries and public utilities were on the truck movement of coal.

West Virginia Coal Association

Fraught with as much importance to the West Virginia Coal Association as anything else which claimed its attention at its annual meeting in Washington, D. C., on July 13 was the proposed withdrawal from membership in the State association of the Northern West Virginia Association, no announcement being made of the reasons which prompted the Northern West Virginia to take such a step. That such action may not be final was rather indicated when the association named a special committee to inquire into the proposed withdrawal, with a view to ascertaining and removing the cause of withdrawal.

There were discussed during the meeting the transportation situation, labor troubles in the southern part of the state and the general market situation, especially with reference to prices.

It was decided, tentatively at least, to so change the by-laws of the association that in the future, membership on the Executive Committee and the voting privilege would be limited to members, secretaries of the various associations not being given a vote.

Endorsement was given by the association to the State First-Aid meet to be held in Charleston in August. The Association appropriated the sum of $500 toward defraying the expenses of the meet. Virtually all the districts in the state were represented at the Washington meeting.

Winding Gulf Operators' Association

The mid-summer meeting of the Winding Gulf Operators' Association of West Virginia held on July 31, at White Sulphur Springs, was featured by addresses by J. D. A. Morrow, vice president of the National Coal Association; W. B. Reed, secretary of the association; President Huntington of the Virginian Ry.; President G. W. Stevens of the Chesapeake & Ohio Ry.; G. B. Wall, vice president of the C. & O., among others. Also a resolution was adopted endorsing and approving the position of the National Coal Association in upholding the rights of coal producers to export coal with the same freedom as other business men enjoy in developing foreign trade, and unequivocally opposing any embargo upon the exportation of coal from this country.

E. E. White, president of the E. E. White Coal Co., and also president of the Gulf association presided, the Secretary being George Wolfe, secretary of the same local association. More than one hundred members of the association were in attendance in addition to a number of invited guests.

J. D. A. Morrow in the course of his remarks paid high tribute to the fields of West Virginia which had succeeded in continuing production during the general strike last November and December. Mr. Morrow expressed the opinion that within a few years this country would be exporting 50,000,000 tons of coal a year. He pointed out, however, that the 12,000,000 tons of coal exported this year was only a drop in the bucket compared with total production.

President Stevens of the Chesapeake & Ohio in his address declared that he despaired of ever getting back the 7,000 cars which had been sent to foreign lines.

In the course of his address President Huntington of the Virginian declared that his road would shortly have in operation 1,000 120-ton coal cars and that equipment in general would be provided to take care of increased tonnage.

In the Winding Gulf field during April only one company succeeded in maintaining an average loading of 60 tons to a car. The Winding Gulf Operators' Association has been engaged for several months in a campaign for larger loadings per car and hence has been keeping a record of what each company has done toward increasing car loadings.

Figures show that there was only one operation which loaded as much as 59 and 58 tons a car during April; four, however, averaged 57 tons to a car, and five loading, on an average, 56 tons. When it came to loading 55 tons per car, on an average, there were 11 companies, 14 loading as much as 54 tons. There were 23 companies who managed to load 53 tons to a car, on an average, during the month.

Obituary

Russell A. Griffin, general sales manager of the National Pole Co., died recently at his home of pneumonia. Mr. Griffin was well known among telephone people. He was for many years connected with the American Telephone & Telegraph Co. and later with the Western Electric Co., before going into the pole business.

William C. Webb, mine foreman of the Belton Coal Mining Co., Drakesboro, Ky., was fatally scalded, when a valve blew out in the engine room at the works on July 14. He died while waiting for a Louisville & Nashville train to reach Owensboro.

C. B. Proctor, mine superintendent of the Bry-Mac Coal Co. at Silverville, McCreary County, Ky., was murdered recently by three men whose names the authorities have refused to make public as a search for them is being made by police. Mr. Proctor was shot three times and stabbed in a dozen places. He recovered consciousness before he died and gave the names of his assailants to the police. It is believed that they were employees of the company. After a conference with dissatisfied miners who demanded more money, Mr. Proctor went to West Jellico and was returning home when he was attacked from ambush. Mr. Proctor came to Somerset from Louisville two years ago.

J. E. Sheridan, State Inspector of Coal Mines and a pioneer mining man of New Mexico, died at his home in Santa Ana, Cal., recently after a brief illness. The cause of death was a general breakdown.

J. E. Sheridan was born in Philadelphia in 1851. As a boy of 16 he came West. In 1885 he moved to Silver City. At different times he mined in Colorado, Utah, Nevada and California. At the time of his death Mr. Sheridan held the important office of Inspector of Coal Mines for the State of New Mexico and was a member of the commission named by Governor Larrazolo to revise the tax laws of this state. Mr. Sheridan was named as Inspector of Coal Mines for New Mexico in 1900. During his incumbency of office he secured many improvements in mine management. He was responsible for the present fair and inclusive laws which govern the mining in this state.

Axel Esstrom, consulting electrical engineer for the Delaware & Hudson Co., the Hudson Coal Co., the Mechanicsville Trolley Co., at Albany, N. Y., and also closely associated with the General Electric Co., died recently at his home in Ballston Spa, near Albany, N. Y.

He was particularly well known among the electrical engineers of Scranton, Pa., and spent at least two days of every week there in his capacity as consulting engineer for the Delaware and Hudson interests.

Mr. Esstrom was about 60 years of age. He had been ill about three weeks. The direct cause of his death was peritonitis.

Colonel Robert M. Jackson, 61 years old, a coal operator, recently died at his home in Glendale, Cal.

Dr. David H. Thomas, a well-known coal operator and formerly a physician, died at his late home in Bexley, a suburb of Columbus, Ohio, recently at the age of 52 years. He was a pioneer coal operator in the Pocahontas field in West Virginia and has maintained his winter residence in Columbus for the past ten years. He was born in Wales and came to Pennsylvania with his parents, later going to Coopers, W. Va. He was secretary and treasurer of the Mill Creek Coal & Coke Co., of Coopers; secretary of the Thomas Coal Co., of Thomas, W. Va., and director of the Flat Top Fuel Co., of Bluefield, W. Va. In addition he was a director in a number of financial institutions in Columbus.

Coming Meetings

American Mining Congress will hold its annual meeting at Denver, Col., Nov. 15. Secretary, J. F. Callbreath, Munsey Building, Washington, D. C.

American Institute of Mining & Metallurgical Engineers will hold its fall meeting Aug. 20 to Sept. 3. It is proposed to leave Buffalo by steamer and cruise through the Lakes, the first stop being at Houghton, Mich., after which the party will visit Duluth and the Iron Ranges of Minnesota, spending a day or two in Minneapolis on its return. Secretary, Bradley Stoughton, 29 West 38th St., New York City.

New York State Coal Merchants' Association will hold its annual meeting Sept. 9, 10 and 11 at Richfield Springs, N. Y. Treasurer, G. W. F. Woodside, Albany, N. Y.

The Rocky Mountain Coal Mining Institute, in conjunction with the Colorado Metal Mining Association, the local chapters of the American Mining Congress and the American Institute of Mining & Metallurgical Engineers, and the International First Aid Meet will hold its annual meeting Sept. 9, 10 and 11 at Denver, Col. Secretary, F. W. Whiteside, Denver, Col.

National Safety Council will hold its 1920 congress on Sept. 27 to Oct. 1, inclusive, at Milwaukee, Wis. General Manager, C. W. Price, Chicago, Ill.

Oklahoma Coal Operators' Association will hold its annual meeting Sept. 14, at McAlester, Okla. Secretary, F. F. LaGrave, McAlester, Okla.

CURRENT PRICES—MATERIALS & SUPPLIES

IRON AND STEEL

PIG IRON—Quotations compiled by the Matthew Addy Company:

	Current	One Month Ago
CINCINNATI		
No. 2 Southern	$45.60	$44.60
Northern Basic	42.80	42.80
Southern Ohio No. 2	46.80	43.80
NEW YORK, Tidewater delivery		
2X Virginia (silicon 2.25 to 2.75)	49.65	47.65
Southern No. 2 (silicon 2.25 to 2.75)	49.70	47.70
BIRMINGHAM		
No. 2 Foundry	42.00@44.00	41.00
PHILADELPHIA		
Eastern Pa., No. 2 x 2.25-2.75 sil.	46.00@48.25	45.35-46.35*
Virginia No. 2	45.00*	43.25*
Basic	44.50†	43.00†
Grey Forge	43.50*	42.50*
CHICAGO		
No. 2 Foundry Local	45.00	43.25
No. 2 Foundry Southern	48.70	46.60
PITTSBURGH, including freight charge from the Valley		
No. 2 Foundry Valley	45.65	43.65
Basic	44.40	42.90
Bessemer	44.90	43.40
MONTREAL		
Silicon 2.25 to 2.25%	43.25	43.25

* F. o. b. furnace. † Delivered.

STRUCTURAL MATERIAL—The following are the base prices, f.o.b. mill, Pittsburgh, together with the quotations per 100 lb. from warehouses at the places named:

	Mill	—New York—			
	Pittsburgh	Current	One Year Ago	St. Louis	Chicago
Beams, 3 to 15 in.	$2.45@$3.10	$4.47	$3.47	$4.04	$3.97
Channels, 3 to 15 in.	2.45@ 3.10	4.47	3.47	4.04	3.97
Angles, 3 to 6 in., ¼ in. thick.	2.45@ 3.10	4.47	3.47	4.04	3.97
Tees, 3 in. and larger	2.45@ 3.75	4.47	3.52	4.09	4.02
Plates	2.65@ 4.00	4.67	3.67	4.24	4.17

BAR IRON—Prices in cents per pound at cities named are as follows:

New York	Pittsburgh	Denver	St. Louis	Birmingham
4.57	4.25	4.95	4.50	5.25

NAILS—Prices per keg from warehouse in cities named:

	Mill	St.			Birming-	San
	Pittsburgh	Louis	Chicago	Denver	ham	Francisco
Wire	$3.25@4.50	$6.00	$4.15	$5.40	$5.00	$6.00
Cut		None	5.85	....	5 90	8.50

TRACK SUPPLIES—The following prices are base per 100 lb. f.o.b. Pittsburgh for carload lots, together with the warehouse prices at the places named:

	Pittsburgh	Chicago	St. Louis	Denver	San Francisco	Birmingham
Standard railroad spikes ⅝-in. and larger	$4.00	3.62@4.25	$5.34	$5.50	$7.75	$6.00
Track bolts	6@6.50	4.75@6.50	7.00	6.75	8.75	8.00
Standard section angle bars	3@4	2.75@3.75	2.00	5.05	5.30	....

COLD FINISHED STEEL—Warehouse prices are as follows:

	New York	Chicago	Cincinnati	St. Louis
Round shafting or screw stock, per 100 lb. base	$6.25	$5.80	$6.50	$5.90
Flats, squares and hexagons, per 100 lb. base	6.75	6.30	6.85	6.40

HORSE AND MULE SHOES—Warehouse prices per 100 lb. in cities named:

	Mill				
	Pittsburgh	Chicago	St. Louis	Denver	Birmingham
Straight	$5.75	$7.00	$7.00	$8.15	$7.00
Assorted	5.85	7.15	7.15	8.40	7.25

Cincinnati—Horseshoe nails sell for $4.50 to $5 per 25-lb. box.

CAST-IRON PIPE—The following are prices per net ton for carload lots:

	—New York—					
	Current	One Month Ago	One Year Ago	Chicago	St. Louis	San Francisco
4 in.	$79.30	$79.30	$55.00	$78.80	$78.00	$97.55
6 in. and over	76.30	76.30	52.00	75.80	75.00	94.55

Gas pipe and 16-ft. lengths are $1 per ton extra.

STEEL RAILS—The following quotations are per ton f.o.b. Pittsburgh and Chicago for carload or larger lots. For less than carload lots 5c. per 100 lb. is charged extra:

	—Pittsburgh—		—Chicago—	
	Current	One Year Ago	Current	One Year Ago
Standard Bessemer rails	$45@60	$45.00	$45.00 @$55.00	$45.00
Standard openhearth rails	47@60	47.00	47.00 @ 57.00	47.00
Light rails, 8 to 10 lb.	50.00@55.00	2.585*	2.585*@ 3.75*	2.835*
Light rails, 12 to 14 lb.	50.00@55.00	2.54*	2.54* @ 3.75*	2.79*
Light rails, 25 to 45 lb.	50.00@55.00	2.45*	2.45* @ 3.75*	2.70*

* Per 100 lb.

OLD MATERIAL—The prices following are per gross ton paid to dealers and producers in New York. In Chicago and St. Louis the quotations are per net ton and cover delivery at the buyer's works, including freight transfer charges:

	New York	Chicago	St. Louis
No. 1 railroad wrought	$30.00	$28.00	$28.00
Stove plate	24.50	28.00	30.50
No. 1 machinery cast	39.00	36.00	37.00
Machine shop turnings	15.50	10.00	13.00
Cast borings	17.50	13.00	15.50
Railroad malleable cast	30.00	27.00	27.00
Rerolling rails	29.00	....	....
Relaying rails	54.00	50@55	50@55

COAL BIT STEEL—Warehouse price per pound is as follows:

New York	Cincinnati	Birmingham	St. Louis	Chicago	Denver
$0.10	$0.16½	$0.18	$0.11½	$0.15	$0.18

DRILL STEEL—Warehouse price per pound:

	New York	St. Louis	Birmingham	Denver
Solid	12@14c.	13c.	15c.	....
Hollow, ½ hex.	17c.	....	....	21c.

PIPE—The following discounts are to jobbers for carload lots on the Pittsburgh basing card, discounts on steel pipe, applying as from January 14, 1920, and on iron pipe from anuary 7, 1920:

BUTT WELD

Inches	Steel Black	Steel Galv.	Inches	Iron Black	Iron Galv.
¼ to 3	57½@54	44 @40½	¼ to 1¼	34½@24½	18½@ 8

LAP WELD

2	50½@47	38 @34½	2	28½@20½	14½@ 6½
2½ to 6	53½@50	41 @37½	2½ to 6	30½@22½	17½@ 9½

BUTT WELD, EXTRA STRONG PLAIN ENDS

¼ to 1¼	45½@42	35@31½	¼ to 1¼	34½@24½	19½@ 9½

LAP WELD, EXTRA STRONG PLAIN ENDS

2	48½@45	37½@33½	2	29½@21½	16½@ 8
2½ to 4	51½@48	40 @36½	2½ to 4	31½@23½	19½@11½
4½ to 6	50½@47	39 @35½	4½ to 6	30½@22½	18½@10½

Stocks discounts in cities named are as follows:

	—New York—		—Cleveland—		—Chicago—	
	Black	Galvanized	Black	Galvanized	Black	Galvanized
¼ to 3 in. steel butt welded	40%	24%	40%	31%	54@40	40½@30½
3½ to 3 in. steel lap welded	35%	20%	42%	27%	50@40	37½@27½

Malleable fittings. Class B and C, from New York stock sell at list + 23%. Cast iron, standard sizes, net.

WIRE ROPE—Discounts from list price on regular grades of bright and galvanized are as follows:

	New York and St. Louis
Hercules red strand, all constructions	20%
Patent flattened strand, special and cast steel	20%
Patent flattened strand, iron rope	5%
Plow steel round strand rope	30%
Special steel round strand rope	30%
Cast steel round strand rope	22½%
Iron strand and iron tiller	5%
Galvanized iron rigging and guy rope	+12%

San Francisco: Galvanized, less 5%, bright less 25%.
Chicago, +12½ on galvanized, 30 off on bright.

SHEETS—Quotations are in cents per pound in various cities from warehouse; also the base quotations from mill:

	Large Mill Lots	—New York—			
Blue Annealed	Pittsburgh	Current	One Yr. Ago	St. Louis	Chicago
No. 10	3.55-7.00	7.12@ 8.00	4.57	8.10	7.02
No. 12	3.60-7.05	7.17@ 8.05	4.57	8.15	7.07
No. 14	3.65-7.10	7.22@ 8.10	4.67	8.20	7.12
No. 16	3.75-6.20	7.32@ 8.20	4.77	8.30	7.22
Black:					
*Nos. 18 and 20	4.20-6.20	8.30@ 9.80	5.30	8.70	7.80
*Nos. 22 and 24	4.25-6.25	8.35@ 9.85	5.35	8.75	7.85
*No. 26	4.30-6.30	8.40@ 9.90	5.40	8.80	7.90
*No. 28	4.35-6.35	8.50@10.00	5.50	8.90	8.00
Galvanized:					
No. 10	4.70-8.00	8.80@11.00	6.20	9.00	8.15
No. 12	4.80-8.10	8.90@11.00	6.25	9.10	8.20
No. 14	4.80-8.10	8.90@11.00	6.30	9.10	8.35
Nos. 18 and 20	5.10-8.40	9.15@11.40	6.60	9.40	8.65
Nos. 22 and 24	5.25-8.55	9.30@11.55	6.75	9.55	9.05
*No. 26	5.40-8.70	9.45@11.70	6.90	9.70	9.20
†No. 28	5.70-9.00	9.75@12.00	7.20	10.00	9.50

*For painted corrugated sheets add 30c. per 1,000 lb. for 5 to 28 gage; 25 c. for 19 to 24 gages; for galvanized corrugated sheets add 15c., all gages.

SHOP SUPPLIES

NUTS—From warehouse at the places named, on fair size orders, the following amount is deducted from list:

	—New York—		—Chicago—		St. Louis
	Current	One Year Ago	Current	One Year Ago	Current
Hot pressed square	+$6.00	$3.25	$ .50	$1.05	$2.25
Hot pressed hexagon	+ 6.00	2.70	.50	.85	2.25
Cold punched square	+ 6.00	3.25	.50	1.00	2.25
Cold punched hexagon	+ 6.00	2.70	.50	1.00	2.25

Semi-finished nuts, ⅞ and smaller, sell at the following discounts fromlist price

	Current	One Year Ago
New York	30%	50–10%
Chicago	50%	50%
Cleveland	50%	60–10–10%
St. Louis	45%	....

MACHINE BOLTS—Warehouse discounts in the following cities:

	New York	Cleveland	Chicago
½ by 4 in. and smaller	+20%	20%	20%
Larger and longer up to 1 in. by 30 in.	+20%	20%	20%

WASHERS—From warehouses at the places named the following amount is deducted from list price:

For wrought-iron washers:
New York....list Cleveland.....$2.50 Chicago.....$3.00

For cast-iron washers the base price per 100 lb. is as follows:
New York.....$7.00 Cleveland.....$4.50 Chicago.....$4.75

RIVETS—The following quotations are allowed for fair sized orders from warehouse:

	New York	Cleveland	Chicago
Steel ⅞ and smaller	List Net	40%	30%
Tinned	List Net	40%	30%

Boiler, ½, ¾, 1 in. diameter by 2 in. to 5 in. sell as follows per 100 lb.:
New York.....$6.00 base Chicago.....$5.62 Pittsburgh.....$4.50

Structural, same sizes:
New York.....$7.10 Chicago.....$5.72 Pittsburgh.....$4.60

CONSTRUCTION MATERIALS

LINSEED OIL—These prices are per gallon:

	New York Current	New York One Year Ago	Chicago Current	Chicago One Year Ago
Raw, 5-bbl. lots	$1.48	$2.15	$1.95	$2.53
5-gal. cans	1.51*	2.28	2.15	2.73

*To this *oil* price must be added the cost of the cans (returnable), which is $2.25 for a case of six.

WHITE AND RED LEAD—Base price.

	Red Current Dry	Red Current In Oil	Red 1 Year Ago Dry	Red 1 Year Ago In Oil	White Current Dry and In Oil	White 1 Year Ago Dry and In Oil
100-lb. keg	15.50	17.00	13.00	14.50	15.50	13.00
25 and 50-lb. kegs	15.75	17.25	13.25	14.75	15.75	13.25
12½-lb. keg	16.00	17.50	13.50	15.00	16.00	15.50
5-lb. cans	18.50	20.00	15.00	16.50	18.50	15.00
1-lb. cans	20.50	22.00	16.00	17.50	20.50	16.00

500 lb. lots less 10% discount. 2000 lb. lots less 10–2½% discount.

COMMON BRICK—The prices per 1000 in cargo or carload lots are as follows:

Chicago.....$16.00 Cincinnati.....$24.00
St. Louis, salmon..... 16.00 Birmingham..... 15.00

PREPARED ROOFINGS—Standard grade rubbered surface, complete with nails and cement, costs per square as follows at manufacturing points:

	New York 1-Ply	New York 2-Ply	New York 3-Ply	Philadelphia 1-Ply c.l.	Philadelphia 2-Ply l.c.l.	Philadelphia 3-Ply c.l.
No. 1 grade	$2.50	$3.00	$3.55	$2.40	$2.90	$3.45
No. 2 grade	2.25	2.70	3.20	2.15	2.00	3.10

Slate-surfaced roofing (red and green) in rolls of 108 sq. ft. costs $4.25 per roll in carload lots and $4.50 for smaller quantities.

Shingles, red and green slate finish, cost $7.75 per square in carloads; $8.00 in smaller quantities, in Phi adelphia.

ROOFING MATERIALS—Prices per ton f.o.b. New York and Chicago:

Tar felt (14 lb. per square of 100 sq.ft.) per roll	$3.50
Tar pitch (in 400-lb. bbl.) per 100 lb.	2.00
Asphalt pitch (in barrels) per ton	54.50
Asphalt felt (light) per ton	123.00
Asphalt felt (heavy) per ton	127.00

HOLLOW TILE—Price per block in carload lots for hollow building tile:

	4x12x12	8x12x12	12x12x12
Minneapolis	$.1152	$.2016	$.3168
St. Louis	.156	.260	....
New Orleans	.23	.28	.30
Chicago	.1516	.2728	.4093
Cincinnati	.125	.2186	.3286
Birmingham	.135	.240	.....

LUMBER—Price of pine per M in carload lots:

	1-In. Rough 10 In. x 16 Ft.	2-In. T. and G. 10 In. x 16 Ft.	8 x 8 In. x 20 Ft.
St. Louis	$.....	$.....	$41.00
Birmingham	40.00	52.00	54.00
Cincinnati	55.00	50.00	50.00

EXPLOSIVES—Price per pound of dynamite in small lots and price per 25-lb. keg for black powder:

	Low Freezing 20%	Gelatin 40%	Gelatin 60%	Gelatin 80%	Black Powder
New York	.....	$0.3425	$0.3425	.....	$2.30
Boston	$0.2475	.27	.30	$0.3425	2.45
Kansas City	.235	.26	.385	.3275	2.40
New Orleans	.2375 (50%)	.2275	.2475	.....	.....
Seattle	.18	.2175	.2475	.29	2.45
Chicago	.2175	.2525	.2975	.34	2.45
Minneapolis	.2067	.2476	.2782	.....	2.80
St. Louis	.2175	.26	.285	.295	1.90
Los Angeles	.25	.30	.35	.275	2.95

MISCELLANEOUS

GREASES—Prices are as follows in the following cities in cents per pound for barrel lots:

	Cincinnati	St. Louis	Birmingham
Cup	8.5	8½@ 9½	8.5
Fiber or sponge	9	8½@ 9½	8.5
Transmission	10	12 @14	8.5
Axle	5	5½ @ 6½	5.5
Gear	6.5	6½ @ 6½	8.5
Car journal	12.0	8½ @ 9½	4.5

BABBITT METAL—Warehouse prices in cents per pound:

	New York Current	New York One Year Ago	Cleveland Current	Cleveland One Year Ago	Chicago Current	Chicago One Year Ago
Best grade	90.00	90.00	61.00	79.00	60.00	75.00
Commercial	50.00	50.50	21.00	18.50	15.00	15.00

HOSE—Following are prices of various classes of hose:

Fire

	50-Ft. Lengths
Underwriters' 2½-in.	85c. per ft.
Common, 2½-in.	30%

Air

	First Grade	Second Grade	Third Grade
¾-in. per ft.	$0.60	$0.40	$0.30

Steam—Discounts from list

First grade	20%	Second grade	30%	Third grade	45%

LEATHER BELTING—Present discounts from list in fair quantities (½ doz. rolls):

Light Grade	Medium Grade	Heavy Grade
30%	30%	20%

RAWHIDE LACING—For cut, best grade, 25%; 2nd grade, 30%. For laces in sides, best, 79c. per sq. ft.; 2nd, 75c. Semi-tanned: cut, 20%; sides, 83c. per sq. ft.

PACKING—Prices per pound:

Rubber and duck for low-pressure steam	$1.00
Asbestos for high-pressure steam	1.70
Duck and rubber for piston packing	1.00
Flax, regular	1.20
Flax, waterproofed	1.70
Compressed asbestos sheet	.90
Wire insertion asbestos sheet	1.50
Rubber sheet	50
Rubber sheet, wire insertion	.70
Rubber sheet, duck insertion	.50
Rubber sheet, cloth insertion	.30
Asbestos packing, twisted or braided, and graphited, for valve stems and stuffing boxes	1.30
Asbestos wick, ½- and 1-lb. balls	.85

MANILA ROPE—For rope smaller than ¾-in. the price is ½ to 2c. extra: while for quantities amounting to less than 600 ft. there is an extra charge of 1c. The number of feet per pound for the various sizes is as follows: ¼-in., 8 ft.; ½-in., 6; ¾-in., 4½; 1 in., 3½; 1¼-in., 2 ft. 10 in.; 1½-in., 2 ft. 4 in. Following is price per pound for ½-in. and larger, in 1200-ft. coils:

Boston	$0.30½	Birmingham	$0.324
New York	.29	Denver	.30
St. Louis	.27½	Kansas City	.30½
Chicago	.29½	New Orleans	.28½
Minneapolis	.29½	Seattle	.28
San Francisco	.27	Los Angeles	.31

PIPE AND BOILER COVERING—Below are discounts and part of standard lists:

PIPE COVERING Pipe Size	Standard List Per Lin.Ft.	BLOCKS AND SHEETS Thickness	Price per Sq.Ft.
1-in.	$0.27	½-in.	$0.27
2-in.	.36	1 -in.	.30
3-in.	.45	1½-in.	.45
4-in.	.60	2 -in.	.60
6-in.	.80	2½-in.	.75
8-in.	1.10	3 -in.	.90
10-in.	1.30	3½-in.	1.05

85% magnesia high pressure..... List

For low-pressure heating and return lines.....
4-ply.... 40% off
3-ply.... 42% off
2-ply.... 44% off

WIRING SUPPLIES—New York prices for tape and solder are as follows:

Friction tape, ½-lb. rolls	55c. per lb.
Rubber tape, ½-lb. rolls	60c. per lb.
Wire solder, 50-lb. spools	42c. per lb.
Soldering paste, 2-oz. cans	$1.20 per doz.

COPPER WIRE—Prices per 1000 ft. for rubber-covered wire in following cities:

	Denvr Single Braid	Denvr Double Braid	Denvr Duplex	Birmingham Single Braid	Birmingham Double Braid	Birmingham Duplex	St. Louis Single Braid	St. Louis Double Braid	St. Louis Duplex
14	$15.64	.....	$38.45	$12.23	.....	$38.64	$14.00	$19.75	$38.00
10	24.50	.....	.....	27.60	.....	65.57	23.25	26.25	59.50
8	33.48	$56.81	.....	38.64	.....	87.33	32.60	36.00	80.20
6	.....	77.17	.....	69.12	.....	.....	55.85	57.75	.....
4	.....	108.10	.....	.....	$107.42	.....	80.45	82.75	.....
2	.....	142.00	.....	.....	138.46	.....	120.90	123.65	.....
1	.....	167.70	.....	.....	178.52	.....	156.95	160.45	.....
0	.....	198.20	.....	.....	217.09	.....	195.50	195.50	.....
00	.....	234.60	.....	.....	263.57	.....	.....	.....	.....
000	.....	279.60	.....	.....	320.44	.....	.....	.....	.....
0000	.....	.....	.....	.....	389.17	.....	.....	.....	.....

FREIGHT RATES—On finished steel products in the Pittsburgh district including plates, structural shapes, merchant steel, bars, pipe fittings, plain and galvanized wire nails, rivets, spikes, flat sheets (except planished), chains, etc., the following freight rates per 1000 lb. are effective:

Boston	$0.30	New Orleans	$0.385
Buffalo	0.17	New York	0.27
Chicago	0.27	Philadelphia	0.245
Cincinnati	0.23	St. Louis	0.24
Cleveland	0.17	St. Paul	0.495
Kansas City	0.59	Pacific Coast (all rail)	1.25*

Note—Add 3% transportation tax. *Minimum carload, 80,000 lb.